

**MAG 2007 FIVE PERCENT PLAN FOR PM-10 FOR THE
MARICOPA COUNTY NONATTAINMENT AREA**

DECEMBER 2007



MAG 2007 FIVE PERCENT PLAN FOR PM-10 FOR THE MARICOPA COUNTY NONATTAINMENT AREA

Prepared by:



December 2007

Technical Assistance Provided By:

Arizona Department of Environmental Quality
Arizona Department of Transportation
Maricopa County Air Quality Department
U.S. Environmental Protection Agency

**MAG 2007 FIVE PERCENT PLAN FOR PM-10 FOR THE
MARICOPA COUNTY NONATTAINMENT AREA**

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APPENDIX A

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- Exhibit 2: 1992 Memorandum of Agreement for Air Quality Planning.
- Exhibit 3: Letter from Felicia Marcus, EPA Region IX Administrator to Russell Rhoades, Director of the Arizona Department of Environmental Quality Dated September 18, 1996.
- Exhibit 4: Modified Second Consent Decree. Ober vs. Environmental Protection Agency. March 25, 1997.
- Exhibit 5: Final Rulemaking to Approve in Part and Disapprove in Part the ADEQ Plan for Attainment for the 24-hour PM-10 Standard for the Maricopa County PM-10 Nonattainment Area. Environmental Protection Agency. August 4, 1997.
- Exhibit 6: Approval and Promulgation of Implementation Plans; Arizona - Maricopa County PM-10 Nonattainment Area; Serious Area Plan for Attainment of the PM-10 Standards; Final Rule. July 25, 2002.

APPENDIX B

- Exhibit 1: 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area. May 2007.
- Exhibit 2: MAG Analysis of Particulate Control Measure Cost Effectiveness. Sierra Research, Inc. April 18, 2007.
- Exhibit 3: Air Quality Technical Advisory Committee Recommendations on the Suggested List of Measures to Reduce PM-10 Particulate Matter. March 28, 2007.
- Exhibit 4: State Assurances that the State has the Authority to Implement the Measures in the Plan: A.R.S. Section 49-406 I. and J.

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APPENDIX C

- Exhibit 1: Technical Document in Support of the MAG 2007 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area. Maricopa Association of Governments. December 2007.

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- Exhibit 1: Public Hearing Process Documentation
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MAG 2007 FIVE PERCENT PLAN FOR PM-10 FOR THE MARICOPA COUNTY NONATTAINMENT AREA

EXECUTIVE SUMMARY



MAG 2007 FIVE PERCENT PLAN FOR PM-10 EXECUTIVE SUMMARY

Within the Maricopa County nonattainment area, the National Ambient Air Quality Standard has not yet been attained for PM-10 particulate pollution. The Maricopa Association of Governments was designated by the Governor of Arizona in 1978 and recertified by the Arizona Legislature in 1992 to serve as the Regional Air Quality Planning Agency to develop plans to address air pollution problems.

Based upon the 1990 Clean Air Act Amendments, the Maricopa County nonattainment area was initially classified as Moderate for PM-10 particulate pollution. However, on May 10, 1996, the nonattainment area was reclassified to Serious due to failure to attain the particulate standard by December 31, 1994. The Serious Area reclassification was effective on June 10, 1996.

The Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to the Environmental Protection Agency (EPA) in February 2000. On July 25, 2002, EPA published a notice of final approval for the plan. Collectively, the plan contained approximately seventy-seven committed control measures from the State and local governments. The plan demonstrated attainment of the PM-10 standard by December 31, 2006.

In order to be in attainment, the region needed three years of clean data at the monitors for 2004, 2005, and 2006. However, there were numerous exceedances of the 24-hour standard in 2005 and 2006. On June 6, 2007, EPA published a final notice with its findings that the Maricopa County nonattainment area had failed to attain the PM-10 standard by the federal deadline of December 31, 2006.

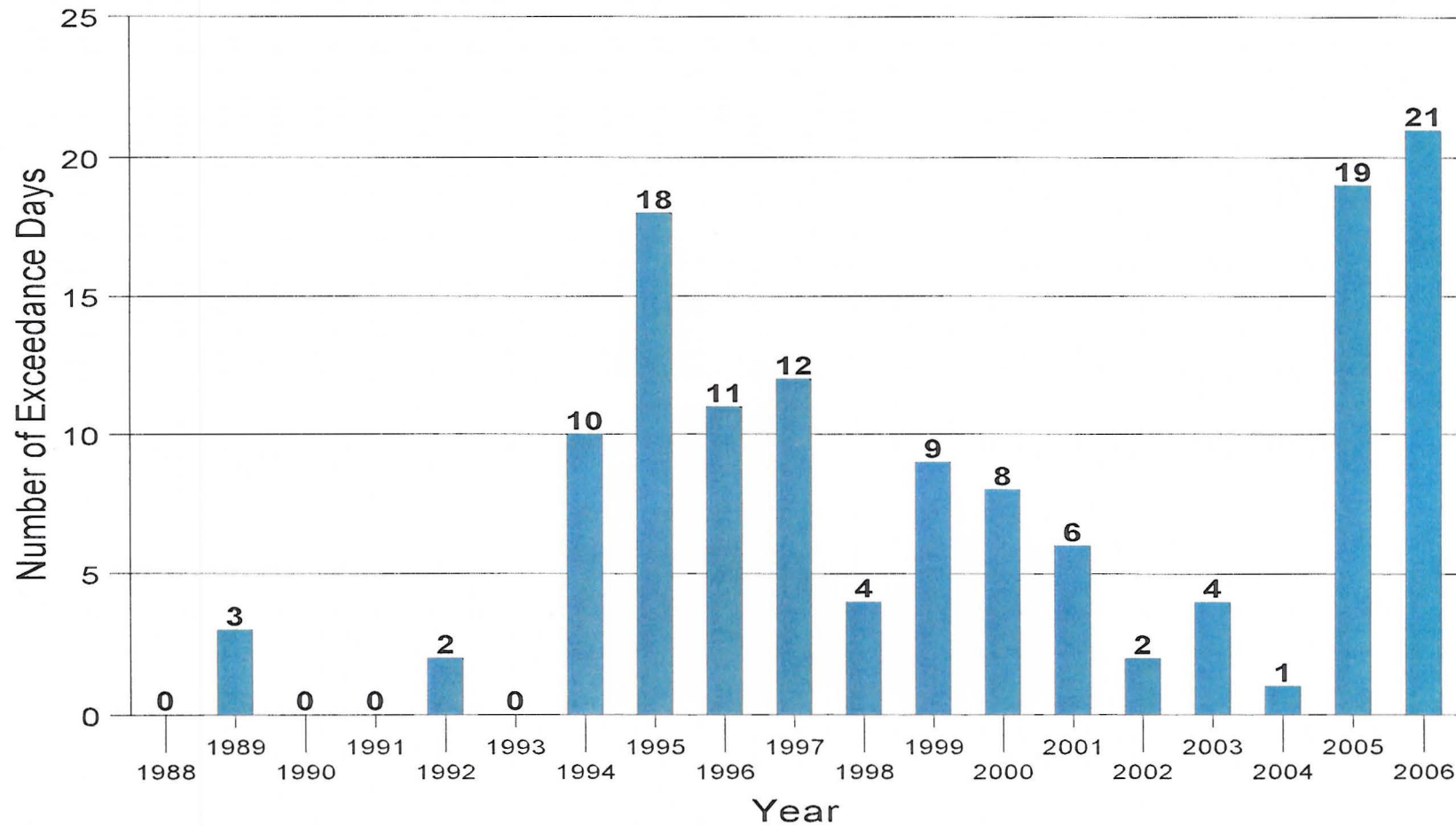
In accordance with Section 189 (d) of the Clean Air Act, the Five Percent Plan for PM-10 is due to the Environmental Protection Agency by December 31, 2007. The plan is required to reduce PM-10 emissions by at least five percent per year until the standard is attained as measured by the monitors. The Clean Air Act specifies that the plan must be based upon the most recent emissions inventory for the area and also include a modeling demonstration of attainment.

Particulate air pollution can occur throughout the year. The formation of PM-10 particulate pollution is dependent upon several factors. Among these factors are stagnant masses, severe temperature inversions in the winter, high winds in the summer, and fine, silty soils characteristic of desert locations. In the Maricopa County nonattainment area, particulate matter (PM-10) concentrations are elevated during various seasons of the year and under different weather conditions. The variability is due to the diverse composition of PM-10 and the sources contributing to this diversity.

The trend in PM-10 levels for the Maricopa County nonattainment area is presented in Figure ES-1. The 24-hour PM-10 standard is 150 micrograms per cubic meter. In 2004,

FIGURE ES-1

NUMBER OF 24-HOUR PM-10 EXCEEDANCE DAYS



Note: The Arizona Department of Environmental Quality began flagging natural and exceptional events in 2004. Exceedances that have been approved or are pending approval by EPA as natural or exceptional events have been removed from this chart.

Sources: 1988 - 1997 - Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area, February 2000.
1998 - 2006 - EPA Air Quality System; Maricopa County Network Reviews; ADEQ Air Quality Reports.

there was one exceedance day of the 24-hour standard. However, in 2005 there were 19 exceedance days and in 2006 there were 21 exceedance days of the 24-hour standard. Figure ES-2 indicates the monitors where exceedances occurred. The violations of the standard at the Bethune Elementary School, Durango Complex, and West 43rd Avenue monitors caused the region to fail to attain the PM-10 standard by the December 31, 2006 attainment date.

A rigorous planning effort was conducted to prepare the MAG 2007 Five Percent Plan for PM-10. An extensive Preliminary Draft Comprehensive List of Measures was compiled for evaluation. The MAG Analysis of Particulate Control Measure Cost Effectiveness report provided an evaluation of forty-six control measures. For each measure, the following information was prepared: narrative description; suggested implementing entity; estimate of the cost of implementation; estimate of the PM-10 emission reduction potential; estimate of the cost effectiveness (\$/ton of PM-10 reduced); and discussion of implementation issues and comments. In preparing the information for the analysis, measures from other PM-10 Serious Areas were reviewed and contacts were established. Relevant dust control literature reviews were performed to obtain data on measured emission reductions. Contacts were established with local agencies and businesses in Maricopa County to determine the cost of labor, equipment, materials, etc.

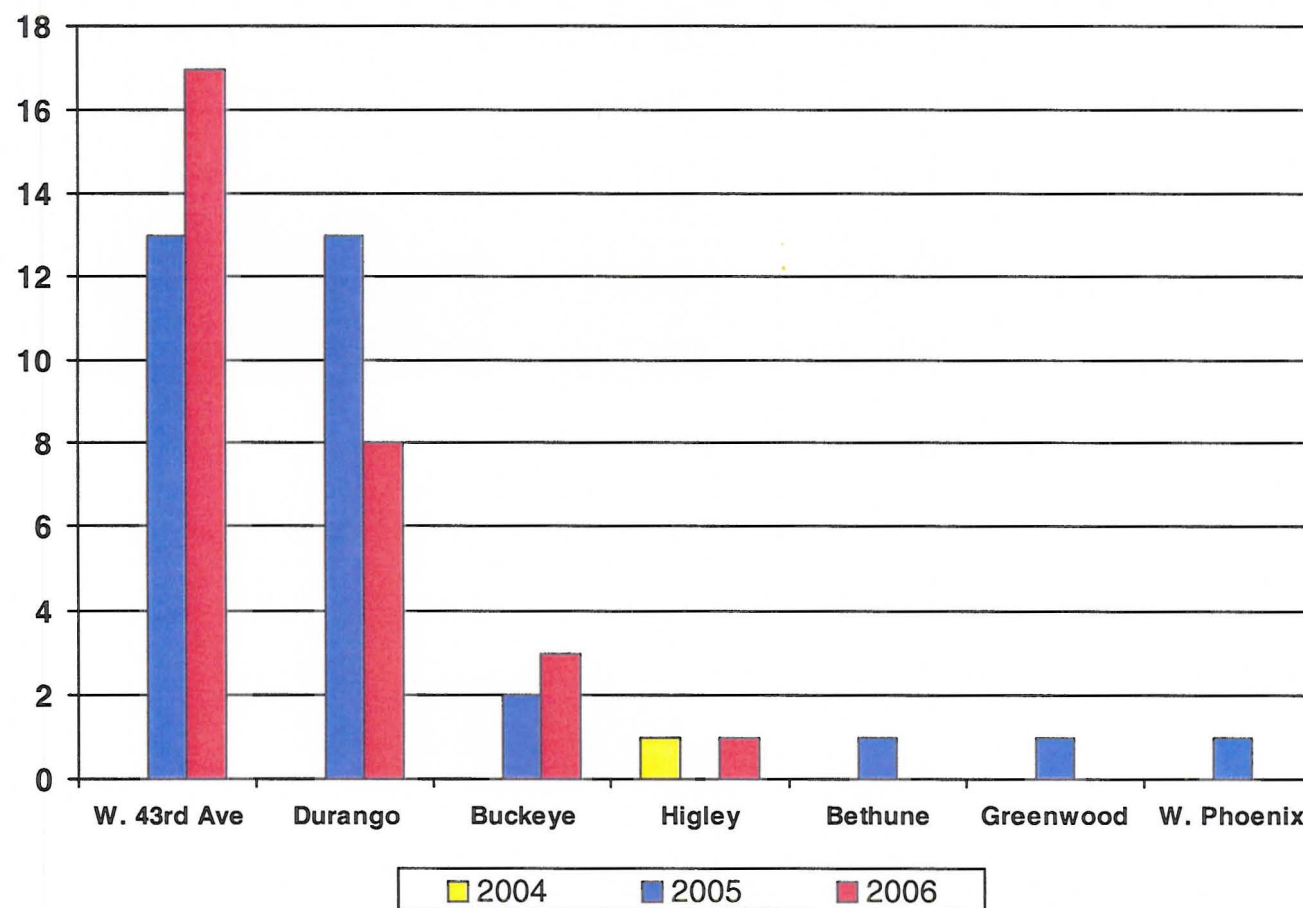
The MAG PM-10 Source Attribution and Deposition Study was another major study which provided information for the evaluation of control measures. The study was designed to identify the sources of emissions contributing to violations of the PM-10 standard at monitors in the nonattainment area during stagnant conditions and characterize the deposition of PM-10 particles emitted by these sources. The MAG consultants for the study were T&B Systems and Sierra Research. The key questions addressed in the study were:

1. Where are the specific source areas and/or sources in the Salt River region that contribute to the particulate matter (PM) loading at the Durango Complex and West 43rd monitoring sites?
2. To obtain useful results from models such as AERMOD, can the regional particle size distribution be characterized on an area basis (i.e., is there an area of uniformity that can be generalized?)
3. What are the causes of heavy PM loading during the morning hours at the Durango and West 43rd monitors? Are the diurnal variations of PM-10 and peaks due to reentrainment of paved road dust, or due to other activities in the surrounding areas that are coincident with traffic peaks?

The approach used for the study involved assessing existing meteorological and PM data; selecting monitoring tools; establishing a sampling plan; defining routes for mobile sampling; determining locations of meteorological data collection; selecting locations to investigate dispersion of roadway sources; conducting sampling in two phases;

FIGURE ES-2

EXCEEDANCES OF THE 24-HOUR PM-10 STANDARD AT MONITORS IN MARICOPA COUNTY



Notes: 1. Exceedances are based on data from the EPA Air Quality System (AQS). Exceedances due to natural events have been removed from the AQS by EPA.

2. The exceedance at the Bethune, Greenwood, and W. Phoenix monitors occurred on 12/12/05.

coordinating with local agencies for related data; and performing daily review of collected data to identify insights, opportunities and problems. The monitoring tools for the study included: a particle lidar; mobile monitoring; DustTrak optical PM-10 monitors; DustTrak optical PM-2.5 monitors; an aerodynamic particle size analyzer; MiniVol filter based samplers; a sodar; and a SCAMPER vehicle. The SCAMPER (System for Continuous Aerosol Monitoring of Particulate Emissions from Roadways) vehicle was used to measure PM-10 from paved roads. From November 15, 2006 through December 14, 2006, extensive measurements were taken in the Salt River area using state-of-the-art technologies.

In general, the study identified a number of sources of PM-10 in the Salt River area. They included: trackout; dragout from unpaved or poorly maintained paved roads or parking lots; unpaved shoulders; unpaved roads; open burning; agriculture; and vehicle activity on unpaved parking areas and vacant lots. Preliminary results from the study were used in the evaluation of control measures and the final results were used in the modeling attainment demonstration.

Based upon the Maricopa County Air Quality Department 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County Nonattainment Area, the primary sources of PM-10 are: Paved Roads (including trackout) 16 percent; Construction (residential) 14 percent; Construction (commercial) 13 percent; Unpaved Roads 10 percent; Construction (road) 9 percent; Fuel Combustion and Fires (industrial natural gas and fuel oil, commercial/institutional natural gas and fuel oil, and residential natural gas, wood and fuel oil) 7 percent; and Windblown Vacant (vacant lots) 7 percent. The sources are depicted in Figure ES-3.

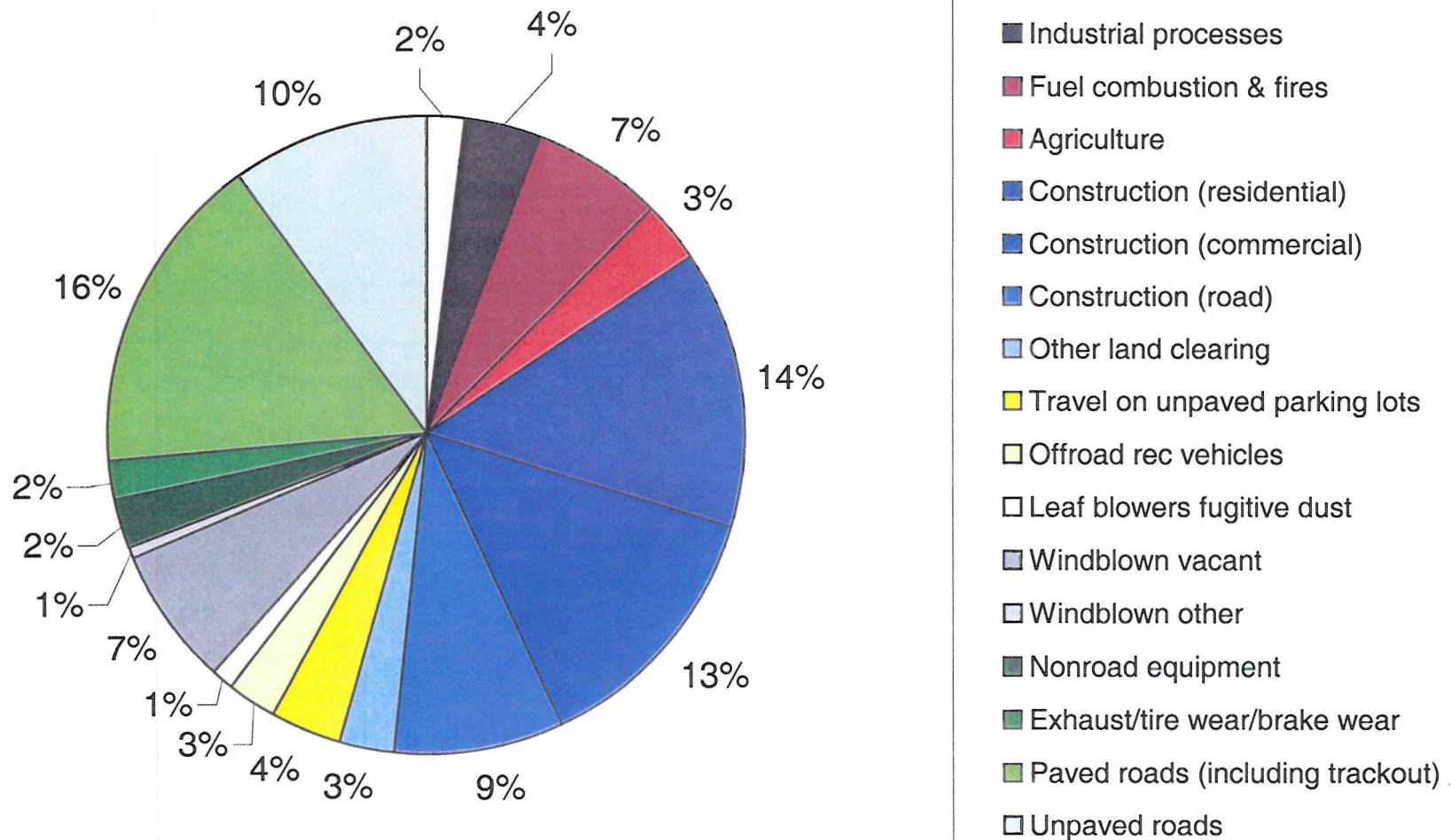
The emissions in the 2005 Periodic Emissions Inventory for PM-10 were projected to 2007, 2008, 2009, and 2010. The total controlled emissions of 97,436 tons in the 2007 projected inventory were used to calculate the five percent reduction target in emissions (see Figure ES-4). This number was multiplied by five percent to determine the PM-10 emissions reduction target of 4,872 tons per year. To meet this annual target, the 2008 emissions with committed control measures must be at least 4,872 tons less than the base case 2008 emissions; the controlled 2009 emissions must be at least 9,744 tons less than the 2009 base case emissions; and the controlled 2010 emissions must be at least 14,616 tons less than the 2010 base case emissions.

In order to reduce PM-10, a broad range of commitments to implement measures were received from the State, Maricopa County, and the twenty-three local governments in the PM-10 nonattainment area. Collectively, the MAG 2007 Five Percent Plan for PM-10 includes fifty-three committed measures.

The key committed measures that were quantified as control measures include: Dust Managers/Coordinators at Earthmoving Sites; Increase Rule 310 and 316 Inspections; Extensive Dust Control Training; Conduct Nighttime and Weekend Inspections; Strengthen Rule 310 to Promote Continuous Compliance; Pave or Stabilize Dirt Shoulders; Pave or

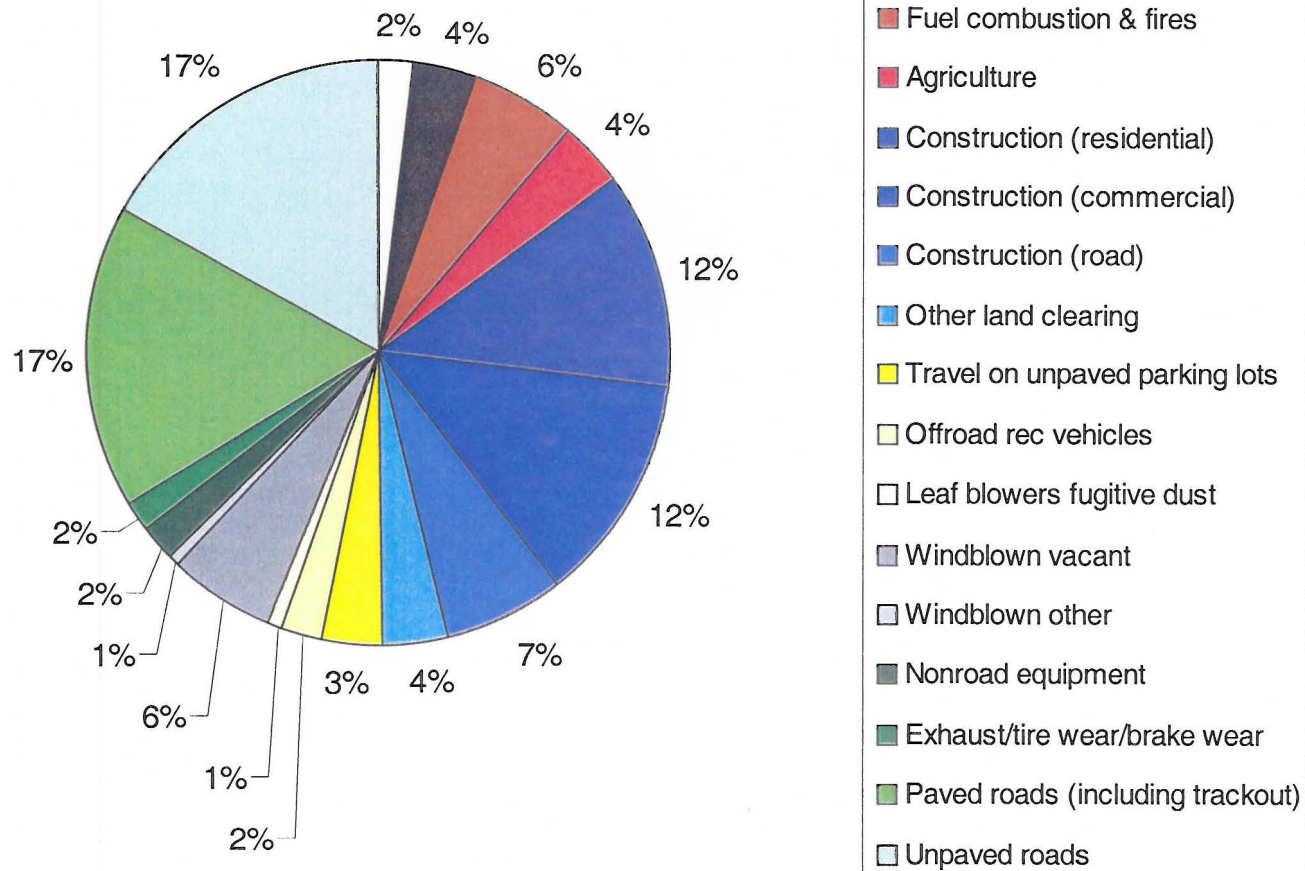
FIGURE ES-3

**2005 PM-10 Emissions
in the PM-10 Nonattainment Area
Total = 84,753 tons/year**



Source: 2005 Periodic Emissions Inventory for the Maricopa County, Arizona Nonattainment Area. Maricopa County Air Quality Department. May 2007.

Figure ES-4
2007 PM-10 Emissions
with Committed Control Measures
Total = 97,436 tons/year



Stabilize Unpaved Parking Lots; Restrict Vehicle Use on Vacant Lots; Strengthen Rule 310.01 for Vacant Lots; and Recover the Cost of Stabilizing Vacant Lots.

The committed control measures were quantified in order to model attainment and meet the five percent reduction targets. The PM-10 emissions reductions for the committed control measures are shown in Figure ES-5.

With the implementation of the committed control measures, the total PM-10 emissions in 2010 are 82,829 tons (See Figure ES-6), which represents a 19.3 percent reduction in the 2010 base case emissions. These reductions are necessary to model attainment of the PM-10 standard at all monitors as expeditiously as practicable, which is 2010. The total reductions due to the committed control measures also exceed the annual five percent reduction targets in 2008, 2009 and 2010, as indicated in Table ES-1.

In accordance with the Clean Air Act, the MAG 2007 Five Percent Plan for PM-10 also contains contingency measures. The contingency measures are committed measures in the adopted plan which achieve emissions reductions beyond those measures relied upon to model attainment of the standard and demonstrate progress toward attainment (i.e., five percent reductions, reasonable further progress, and milestones).

The key committed measures in the Five Percent Plan that were quantified as contingency measures are: Pave or Stabilize Dirt Roads and Alleys; Sweep with PM-10 Certified Street Sweepers; Reduce Trackout Onto Paved Roads; Additional Five Million Dollars in FY 2007 MAG Federal Funds for Paving Dirt Roads and Shoulders; Agricultural Best Management Practices; 15 Mile Per Hour Speed Limits on Dirt Roads; Reduce Offroad Vehicle Use; Certification for Dust Free Developments; and Public Education and Outreach Program.

EPA guidance indicates that contingency measures should provide emissions reductions equivalent to one year of reasonable further progress. The reasonable further progress requirements for Serious PM-10 nonattainment areas are included in Section 189(c) of the Clean Air Act. For the Five Percent Plan, one year of reasonable further progress is equivalent to a reduction in PM-10 emissions of 4,869 tons.

Figure ES-7 shows the impacts of the individual contingency measures in 2010. Collectively, the contingency measures reduce PM-10 emissions by 5,223 tons in 2008, 7,213 tons in 2009, and 9,159 tons in 2010 versus the contingency target of 4,869 tons per year, as shown in Table ES-1.

The total 2010 PM-10 emissions with committed control measures and committed contingency measures are 73,670 tons (see Figure ES-8). Together, these measures reduce base case PM-10 emissions by 28.2 percent in 2010.

For conformity analyses, the onroad mobile source emissions budget includes reentrained dust from travel on paved roads; vehicular exhaust, tire wear, and brake wear; travel on unpaved roads; and road construction. In 2010, the PM-10 emissions from these four source categories total 103.3 metric tons per day. This represents the onroad mobile source emissions budget for conformity.

Figure ES-5
Reductions in 2010 for Committed Control Measures
in the Five Percent Plan for PM-10

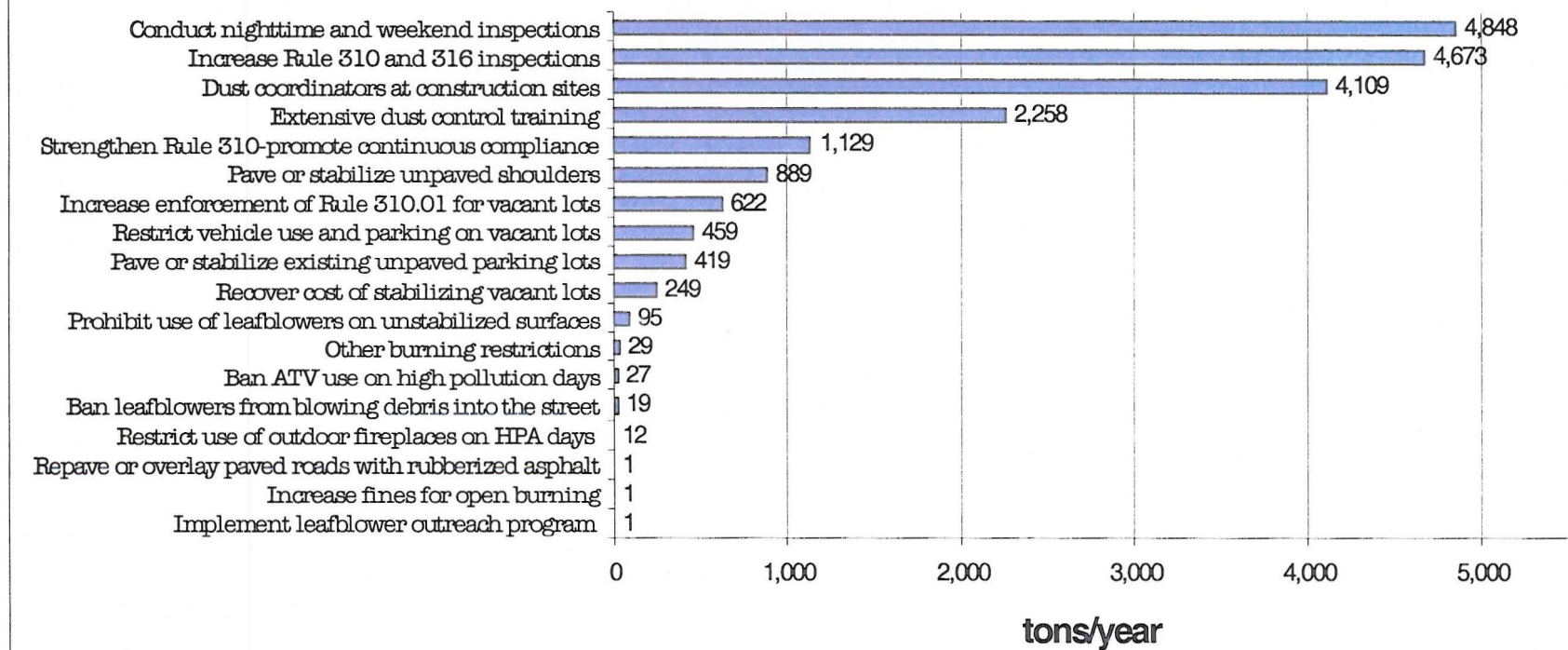


Figure ES-6
2010 PM-10 Emissions
with Committed Control Measures
Total = 82,829 tons/year
(19.3% reduction)

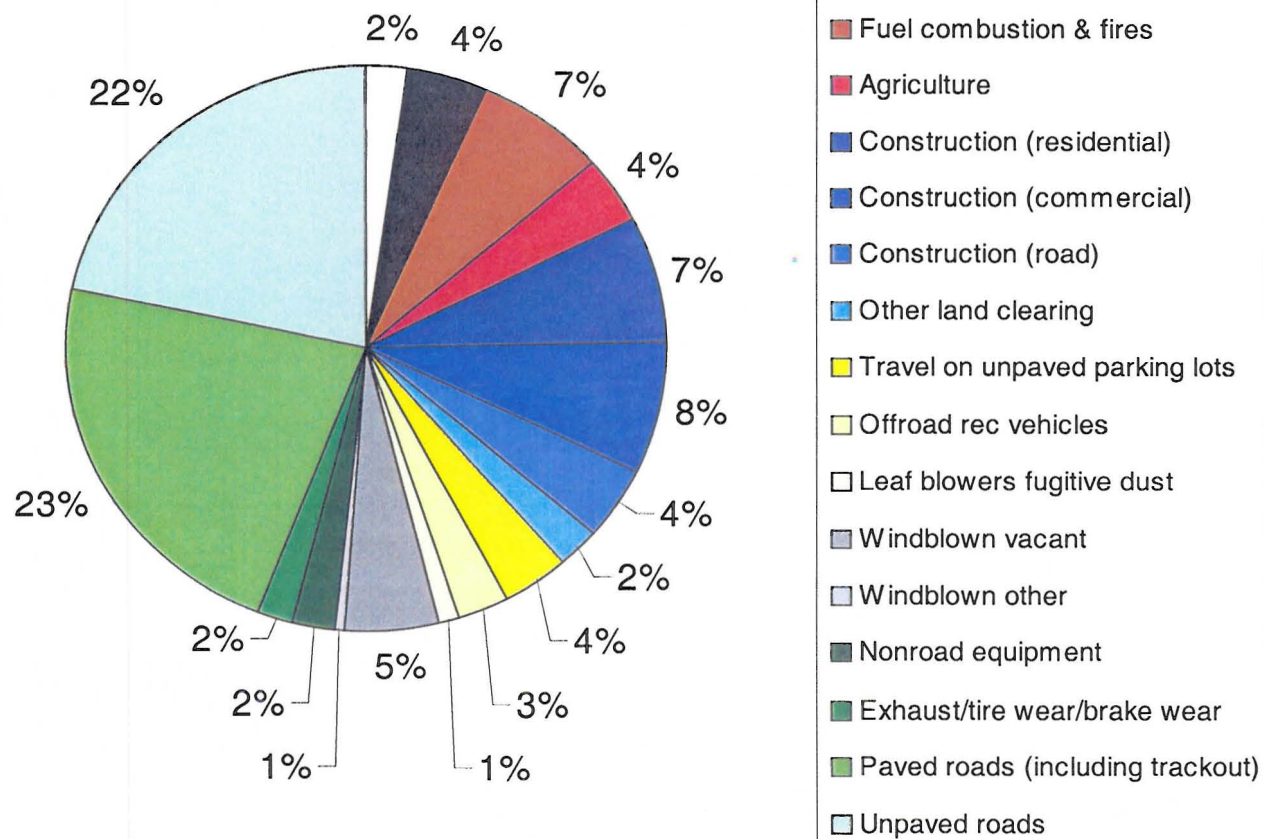


TABLE ES-1

EMISSIONS REDUCTIONS FOR COMMITTED CONTROL MEASURES QUANTIFIED TO MODEL ATTAINMENT AND MEET THE FIVE PERCENT REDUCTION REQUIREMENT

- 6,605 tons vs. five percent reduction target of 4,872 tons in 2008
- 15,423 tons vs. five percent reduction target of 9,744 tons in 2009
- 19,840 tons vs. five percent reduction target of 14,616 tons in 2010

EMISSIONS REDUCTIONS FOR COMMITTED CONTINGENCY MEASURES QUANTIFIED TO MEET THE CONTINGENCY MEASURE REQUIREMENT

- 5,223 tons vs. contingency reduction target of 4,869 tons in 2008
- 7,213 tons vs. contingency reduction target of 4,869 tons in 2009
- 9,159 tons vs. contingency reduction target of 4,869 tons in 2010

Figure ES-7
Reductions in 2010 for Contingency Measures
in the Five Percent Plan for PM-10

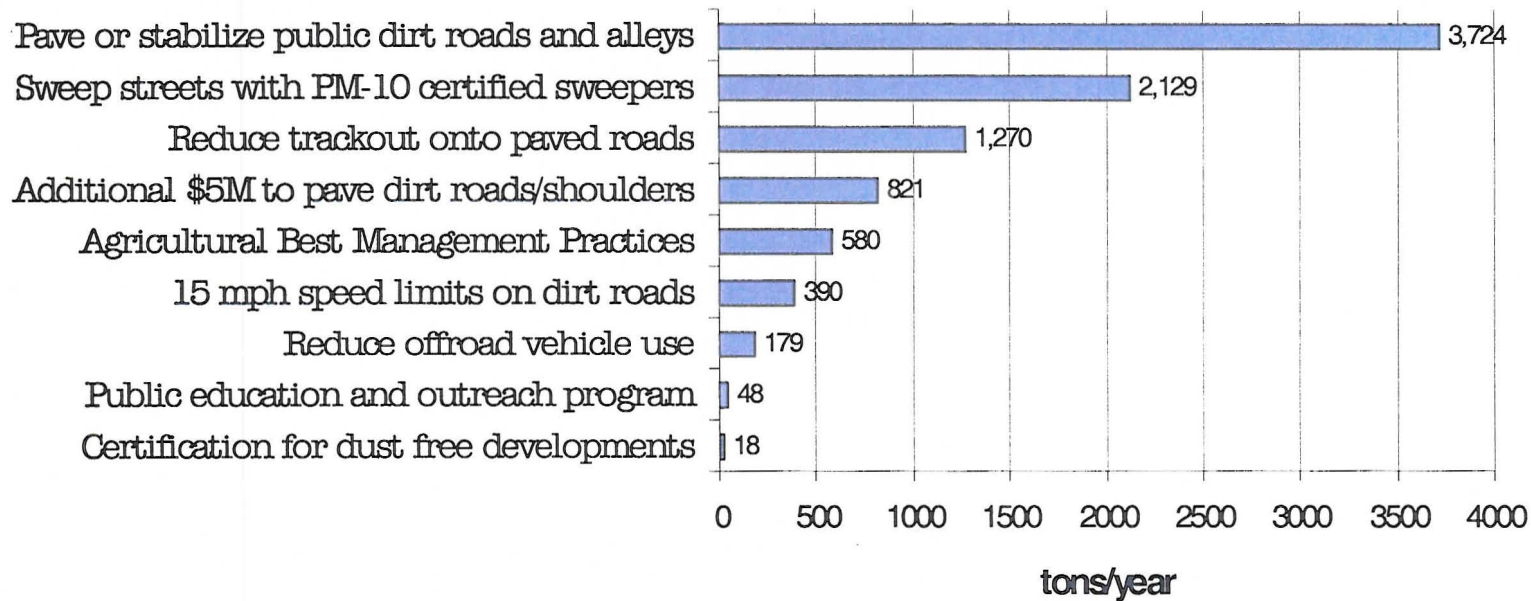
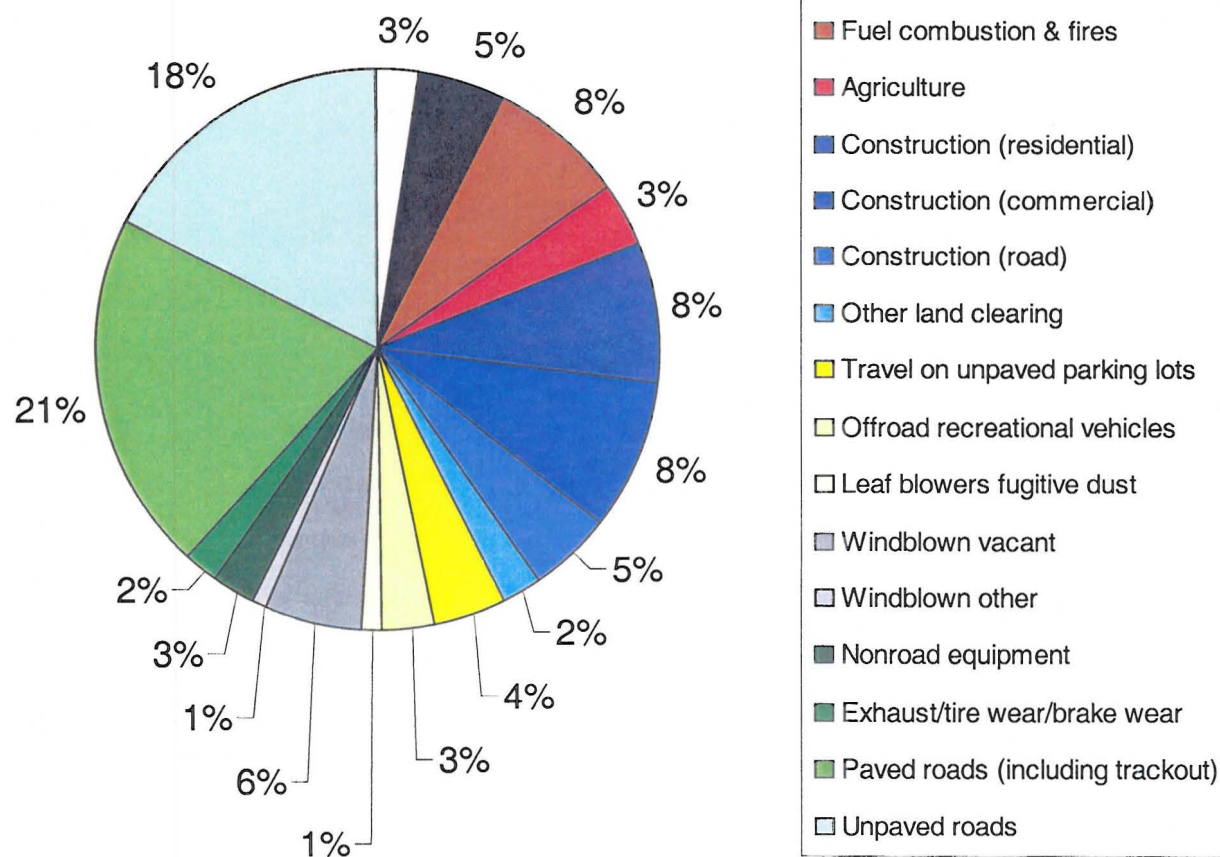


Figure ES-8
2010 PM-10 Emissions
with Committed Control and Contingency Measures
Total = 73,670 tons/year
(28.2% reduction)



CHAPTER ONE

INTRODUCTION

Within the Maricopa County nonattainment area, the National Ambient Air Quality Standard has not yet been attained for PM-10 particulate pollution. On February 7, 1978, the Governor of Arizona designated the Maricopa Association of Governments (MAG) as the lead planning organization for Maricopa County that, together with the State is responsible for determining which elements of the State Implementation Plan revision will be planned, implemented, and enforced by State and local governments in Arizona. This designation was made in accordance with the Clean Air Act Section 174 (a) (see Appendix A, Exhibit 1). In 1992, the Arizona Legislature recertified MAG as the regional planning agency in accordance with Section 174 of the 1990 Clean Air Act Amendments (A.R.S. Section 49-406 A.). This designation is described in the 1992 Air Quality Memorandum of Agreement in Appendix A, Exhibit 2.

Based upon the 1990 Clean Air Act Amendments, the Maricopa County nonattainment area was initially classified as Moderate for PM-10 particulate pollution. However, on May 10, 1996, the nonattainment area was reclassified to Serious due to failure to attain the particulate standard by December 31, 1994. The Serious Area reclassification was effective on June 10, 1996.

The Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to the Environmental Protection Agency (EPA) in February 2000. On July 25, 2002, EPA published a notice of final approval for the plan. Collectively, the plan contained approximately seventy-seven committed control measures from the State and local governments. The plan demonstrated attainment of the PM-10 standard by December 31, 2006.

In order to be in attainment, the region needed three years of clean data at the monitors for 2004, 2005, and 2006. However, there were numerous exceedances of the standard in 2005 and 2006. On June 6, 2007, EPA published a final notice with its findings that the Maricopa County nonattainment area had failed to attain the PM-10 standard by the federal deadline of December 31, 2006.

In accordance with Section 189 (d) of the Clean Air Act, the Five Percent Plan for PM-10 is due to the Environmental Protection Agency by December 31, 2007. The plan is required to reduce PM-10 emissions by at least five percent per year until the standard is attained as measured by the monitors. The Clean Air Act specifies that the plan must be based upon the most recent emissions inventory for the area and also include a modeling demonstration of attainment.

Consequently, the MAG 2007 Five Percent Plan for PM-10 has been prepared to meet these requirements in the Clean Air Act and improve air quality in the Maricopa County nonattainment area. The following narrative describes the historical background preceding the preparation of the MAG Five Percent Plan for PM-10.

HISTORICAL BACKGROUND

In order to meet the Moderate Area particulate requirements, the MAG 1991 Particulate Plan for PM-10 was submitted to the Environmental Protection Agency on November 15, 1991. Two revisions were subsequently submitted on August 11, 1993 and March 3, 1994 primarily to reflect adjustments to the air quality modeling data which had been prepared for the plan by the Arizona Department of Environmental Quality (ADEQ).

The Clean Air Act requirements for Moderate particulate areas included the implementation of Reasonably Available Control Measures and a demonstration of either attainment by December 31, 1994 or a demonstration that attainment by the date was impracticable.

Collectively, the MAG 1991 Particulate Plan for PM-10 and revisions contained a broad range of commitments addressing several particulate control measures. However, based upon the air quality modeling data as revised by the Environmental Protection Agency, the impact of the plan was an 18 percent reduction in emissions against an attainment goal of 22 percent. Therefore, the plan demonstrated that attainment was impracticable by December 31, 1994.

On April 10, 1995, the Environmental Protection Agency published the final approval of the MAG 1991 Particulate Plan for PM-10 (proposed July 28, 1994). The Arizona Center for Law in the Public Interest then filed a lawsuit challenging EPA's approval of the plan. A key contention made by the Center for Law in the Public Interest was that the air quality modeling prepared by ADEQ only addressed the annual particulate standard rather than the 24-hour standard as well. The Center also challenged the adequacy of the State assurances for plan implementation and the reasoned justification for nonimplementation of transportation control measures.

On May 14, 1996, the United States Ninth Circuit Court of Appeals issued its opinion in this case, *Ober vs. EPA*. The Court vacated EPA's approval of the 1991 Particulate Plan for PM-10 due to failure to address the 24-hour particulate standard in the plan. The State was then ordered to prepare a separate demonstration of the implementation of all reasonably available control measures targeting the 24-hour standard violations; attainment or impracticability based upon air quality modeling; and reasonable further progress for the 24-hour standard. The Environmental Protection Agency was ordered to provide for public comment on the justifications for rejecting control measures and on the reasonable further progress demonstration.

Also, the Court upheld the State assurances that pertain to the implementation of the plan. The Court also upheld the consideration of transportation control measures and then

based upon local circumstances, either implementation or provision of reasoned justification for rejection of the measures.

Within the same month that the Ninth Circuit Court issued its opinion, the Environmental Protection Agency made a determination that the Maricopa County nonattainment area had failed to attain the PM-10 particulate standard by the December 31, 1994 date for Moderate Areas. By operation of law, the nonattainment was reclassified to Serious on May 10, 1996, effective June 10, 1996. The determination was based upon monitoring data from 1992-1994 which showed three violations of the 24-hour PM-10 standard in 1992 and violation of the annual PM-10 standard at two monitor sites: South Phoenix and Chandler.

In order to provide direction for complying with the May 1996 Court order for addressing the 24-hour particulate standard and the May 1996 reclassification to Serious, the Environmental Protection Agency outlined a strategy in a letter dated September 18, 1996 to the Director of the Arizona Department of Environmental Quality (see Appendix A, Exhibit 3).

First, the letter indicated that the Arizona Department of Environmental Quality would submit a microscale plan designed to address the 24-hour particulate standard violations by April 18, 1997 (date was later changed to May 9, 1997). The microscale plan was to include an evaluation of the exceedances at five PM-10 monitoring sites in the Maricopa nonattainment area; attainment demonstrations at each monitor; implementation of reasonably available control measures and expedited best available control measures; and reasonable further progress. The measures adopted under the microscale plan were required to be adopted and implemented regionally for the Maricopa County nonattainment area and not just for the localized area around the monitors.

Secondly, the letter addressed the regional Serious Area Plan which was due by December 10, 1997. The plan was to include a regional analysis for the annual and 24-hour particulate standards; demonstration of implementation of Best Available Control Measures; air quality modeling demonstration; and reasonable further progress. The letter further indicated that the microscale plan for the 24-hour standard violations at specific sites, taken together with the regional Serious Area Plan, were designed to satisfy both the additional Moderate and the Serious Area planning requirements.

The approach outlined in this letter became embodied in a consent decree entered into by the Environmental Protection Agency and Arizona Center for Law in the Public Interest on November 26, 1996 and revised March 25, 1997 (see Appendix A, Exhibit 4). Approved by the U.S. District Court, the consent decree obligated EPA to propose a Moderate Area Federal Implementation Plan (FIP) if EPA disapproved all or part of the ADEQ 24-Hour Particulate Plan. The Environmental Protection Agency was required to propose the Moderate Area FIP by March 20, 1998 and finalize it by July 18, 1998.

On May 7, 1997, the Arizona Department of Environmental Quality submitted the Plan for Attainment of the 24-Hour PM-10 Standard. The plan demonstrated attainment of the 24-hour standard at two of the microscale sites: Maryvale and Salt River and implementation of reasonably available control measures/best available control measures for the three permitted source categories of cleared areas, earth moving, and haul roads. The plan did not demonstrate attainment at two sites: Gilbert and West Chandler and did not show implementation of controls for nonpermitted sources (e.g. unpaved parking lots and agricultural fields).

On June 6, 1997, the Environmental Protection Agency proposed approval of part of the ADEQ 24-Hour Particulate Plan and disapproval of part. The proposed approval was for the attainment demonstrations at the Maryvale and Salt River sites. The Maryvale site is located at the Dysart West Park in west Phoenix and is representative of construction sources. The Salt River Site is located near the Salt River in south Phoenix and is representative of industrial and earth moving sources. The approval also covered reasonably available control measures/best available control measures for the three source categories cleared areas, earth moving, and haul roads.

The disapproved portion was due to the lack of attainment demonstrations at the Gilbert and West Chandler sites. The Gilbert site is located at the Gilbert wastewater treatment plant and is representative of agriculture sources, large unpaved parking lots, and large vacant disturbed areas. The West Chandler site is located at Price and Frye roads and is representative of agriculture and construction sources.

On August 4, 1997, the Environmental Protection Agency published final approval and disapproval of the 24-Hour Particulate Standard Plan (see Appendix A, Exhibit 5). As outlined in the March 25, 1997 consent decree, EPA was then under a court order to propose a Moderate Area PM-10 Federal Implementation Plan to correct disapproved portions of the plan by March 20, 1998 and finalize it by July 18, 1998. On August 3, 1998 the Environmental Protection Agency published the final Moderate Area PM-10 Federal Implementation Plan, effective September 2, 1998. The notice also included a final disapproval of the reasonably available control measure and attainment demonstration for the Moderate Area PM-10 Plan. Table 1-1 provides a listing of the key chronological events.

On August 29, 1997, the initial air quality modeling analysis was completed. The modeling did not demonstrate attainment by December 31, 2001 with the committed control measures. A shortfall of a 16.4 percent reduction in PM-10 concentration was identified. Since it appeared that attainment by 2001 was impracticable, an extension request for a later attainment date would be necessary.

On October 29, 1997, the MAG Regional Council took action to direct staff to prepare a request for up to a five-year extension of the attainment date to be included in the Serious Area Particulate Plan for PM-10, for submittal following action by the Legislature. Additional committed measures were needed from the State and local governments to meet the Clean Air Act requirements for the extension request.

TABLE 1-1

MODERATE AREA PARTICULATE PLAN CHRONOLOGY

November 15, 1991	MAG 1991 Particulate Plan for PM-10 (Moderate Area Plan) submitted to the Environmental Protection Agency (EPA).
April 10, 1995	EPA approved MAG 1991 Particulate Plan for PM-10.
April 27, 1995	Arizona Center for Law in the Public Interest filed a suit to challenge EPA's approval of the 1991 Particulate Plan due failure to address the 24-hour standard. Previously, the Arizona Department of Environmental Quality (ADEQ) only performed modeling for the annual PM-10 standard in the MAG 1991 Particulate Plan, rather than the 24-hour standard as well.
May 10, 1996	EPA made a finding that the Maricopa nonattainment area failed to attain the standard and the area was reclassified to Serious effective June 10, 1996. Serious Area Plan due by December 10, 1997.
May 14, 1996	U.S. Ninth Circuit Court of Appeals vacated EPA approval of the 1991 Particulate Plan and ordered EPA to require the State to submit a Limited 24-Hour Particulate Standard Plan.
September 18, 1996	In response to the court order, EPA and ADEQ agreed that ADEQ would submit the 24-Hour Particulate Standard Plan by April 18, 1997, date was later changed to May 9, 1997. The EPA September 18, 1996 letter also directed that the 24-Hour Plan be incorporated into the regional Serious Area Plan.
November 26, 1996 (Revised March 25, 1997)	U.S. District Court approved a consent decree which obligated EPA to propose a Moderate Area Federal Implementation Plan (FIP) if EPA disapproved all or part of the ADEQ 24-Hour Particulate Plan. EPA was required to proposed FIP by March 20, 1998 and finalize it the July 18, 1998. This is an update of the November 26, 1996 consent decree.
May 9, 1997	Arizona Department of Environmental Quality submitted the 24-Hour Particulate Standard Plan to EPA.
August 4, 1997	EPA approved part of the 24-Hour Particulate Plan and disapproved part due to lack of controls on unpaved roads, unpaved parking lots, unpaved vacant lots, and agricultural fields and aprons. Under the March 25, 1997 consent decree, EPA is obligated to propose a Moderate Area FIP by March 20, 1998, finalize it by July 18, 1998 unless the controls are submitted to EPA prior to the promulgation of the FIP.

TABLE 1-1

MODERATE AREA PARTICULATE PLAN CHRONOLOGY (Continued)

December 10, 1997	MAG Serious Area Committed Particulate Control Measures for PM-10 and Support Technical Analysis document submitted to EPA.
August 3, 1998	EPA published the final Moderate Area PM-10 Federal Implementation Plan, effective September 2, 1998. The notice also included a final disapproval of the reasonably available control measure and attainment demonstration for the Moderate Area PM-10 Plan.

On December 3, 1997, the MAG Regional Council approved the submittal of the Serious Area Committed Particulate Control Measures for PM-10 and Support Technical Analysis to EPA by December 10, 1997. This document contained a total of forty-nine committed control measures designed to reduce particulate pollution.

During the next year and a half, a rigorous planning effort was conducted to prepare the extension request elements of the plan and to revise the Maricopa County Fugitive Dust Control Rule 310. On June 16, 1999, the Maricopa County Board of Supervisors approved the Revised Rule 310, for inclusion in the Serious Area Particulate Plan for PM-10.

On June 23, 1999, the MAG Regional Council adopted the MAG 1999 Serious Area Particulate Plan for PM-10. Collectively, the Plan contained approximately 77 committed control measures from the State and local governments. On July 9, 1999, the Arizona Department of Environmental Quality submitted the Serious Area Particulate Plan for PM-10 to the Environmental Protection Agency. A completeness finding was then issued by EPA on August 4, 1999.

On June 29, 1999, EPA withdrew its August 1998 Federal Implementation Plan requirement that Arizona adopt and implement Reasonably Available Control Measures for agricultural fields and aprons in the PM-10 nonattainment area. The Arizona Legislature had passed legislation requiring that agricultural sources implement agricultural best management practices.

On November 9, 1999, EPA notified MAG by telephone and Arizona Governor, Jane Hull, by letter that there was an approvability problem with the 1999 Serious Area Particulate Plan for PM-10. According to EPA, the approvability problem was that the plan assumed that Maricopa County's two fugitive dust control rules would achieve 90 percent compliance by 2006. EPA believed that the compliance rate was unrealistic. In addition, EPA believed that the plan barely addressed dust from paved roads and there was no strategy in the plan for reducing dust on private unpaved roads.

In February 2000, the Revised MAG 1999 Serious Area PM-10 Plan was submitted to EPA to address the approvability problem. The FY 2000-2004 MAG Transportation Improvement Program (TIP) was amended to include Maricopa County paving dirt road projects and funding to purchase PM-10 certified street sweepers. It is important to note that the Maricopa County paving projects addressed unpaved roads including private roads that are publicly maintained. The Resolution to Adopt the Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Area included a commitment from MAG for PM-10 Efficient Street Sweepers. In addition, the Maricopa County Board of Supervisors submitted a new commitment to address the approvability issues with the County fugitive dust control rules. The commitment included steps to strengthen enforcement of the program. The air quality modeling was revised to reflect a lower compliance rate (80 percent) for the County dust control rules and to include the paving of unpaved roads (including private roads that are publicly maintained).

On July 2, 2002, EPA published an inadequacy finding that the control measures in the ADEQ May 1997 Plan for Attainment of the 24-Hour PM-10 Standard-Maricopa PM-10

Nonattainment Area were inadequate to ensure attainment of the PM-10 standard at the Salt River air quality monitoring site. The plan had included a demonstration that with the additional controls adopted by Maricopa County attainment at the site would occur by May 1998. The Salt River site however, continued to violate the standard. A plan revision for the Salt River attainment demonstration was due to EPA by February 2, 2004. To address the inadequacy finding, the Arizona Department of Environmental Quality transmitted a series of revisions to EPA. On August 21, 2007, EPA published a notice finalizing approval of the provisions for the ADEQ Revised PM-10 State Implementation Plan for the Salt River Area which were submitted in October and November 2005. These submittals included adopted rules, resolutions and measures that address particulate PM-10 emissions from fugitive dust sources.

On July 25, 2002, EPA published a notice of final approval for the Revised MAG 1999 Serious Area Particulate Plan for PM-10. In the notice, EPA also approved Maricopa County's fugitive dust control rules, Rules 310 and 310.01, and its residential wood burning restriction ordinance. The extension of the attainment date from December 31, 2001 to December 31, 2006 was also approved (see Appendix A, Exhibit 6).

On July 30, 2002, the Arizona Center for Law in the Public Interest filed a lawsuit which challenged EPA's approval of the Revised MAG 1999 Serious Area Particulate Plan for PM-10. The Center for Law in the Public Interest contended that the plan failed to include CARB diesel fuel; agricultural controls did not comply with requirements for Best Available Control Measures (BACM) and Most Stringent Measures (MSM); and EPA abused its discretion in granting the State an extension of the attainment date.

On May 10, 2004, the U. S. Court of Appeals for the Ninth Circuit issued a ruling in the lawsuit on the Serious Area Particulate Plan for PM-10. The Court ruled that EPA had properly determined that the agricultural measures were Best Available Control Measures and Most Stringent Measures. The Court vacated portions of EPA's final approval of the plan and remanded to EPA the question of whether CARB diesel fuel must be included in the Serious Area Plan as a BACM and MSM and the question of whether the Maricopa County area is eligible for an extension of the attainment date to 2006, but only insofar as that question depends on EPA's determination regarding CARB diesel as a MSM. In response, EPA published a proposed rulemaking notice on July 1, 2005 and a final notice on August 3, 2006 to approve the BACM and MSM demonstrations in the plan and to grant the extension of the attainment date. On June 8, 2007, EPA published a proposed rulemaking notice again reassessing the BACM and MSM demonstrations and again proposing approval of these demonstrations in light of its recent finding that the Maricopa County area failed to attain the 24-hour PM-10 standard by December 31, 2006.

On June 6, 2007, EPA published a final notice with its findings that the Maricopa County nonattainment area had failed to attain the PM-10 standard by the applicable attainment date of December 31, 2006. The findings were based upon monitored air quality data from 2004 through 2006. There were numerous exceedances of the PM-10 standard in 2005 and 2006. As a result, plan provisions that reduce PM-10 emissions by five percent per year until the standard is met are required by Section 189 (d) of the Clean Air Act. The Five Percent Plan for PM-10 is due by December 31, 2007.

OUTLINE OF THE MAG 2007 FIVE PERCENT PLAN FOR PM-10

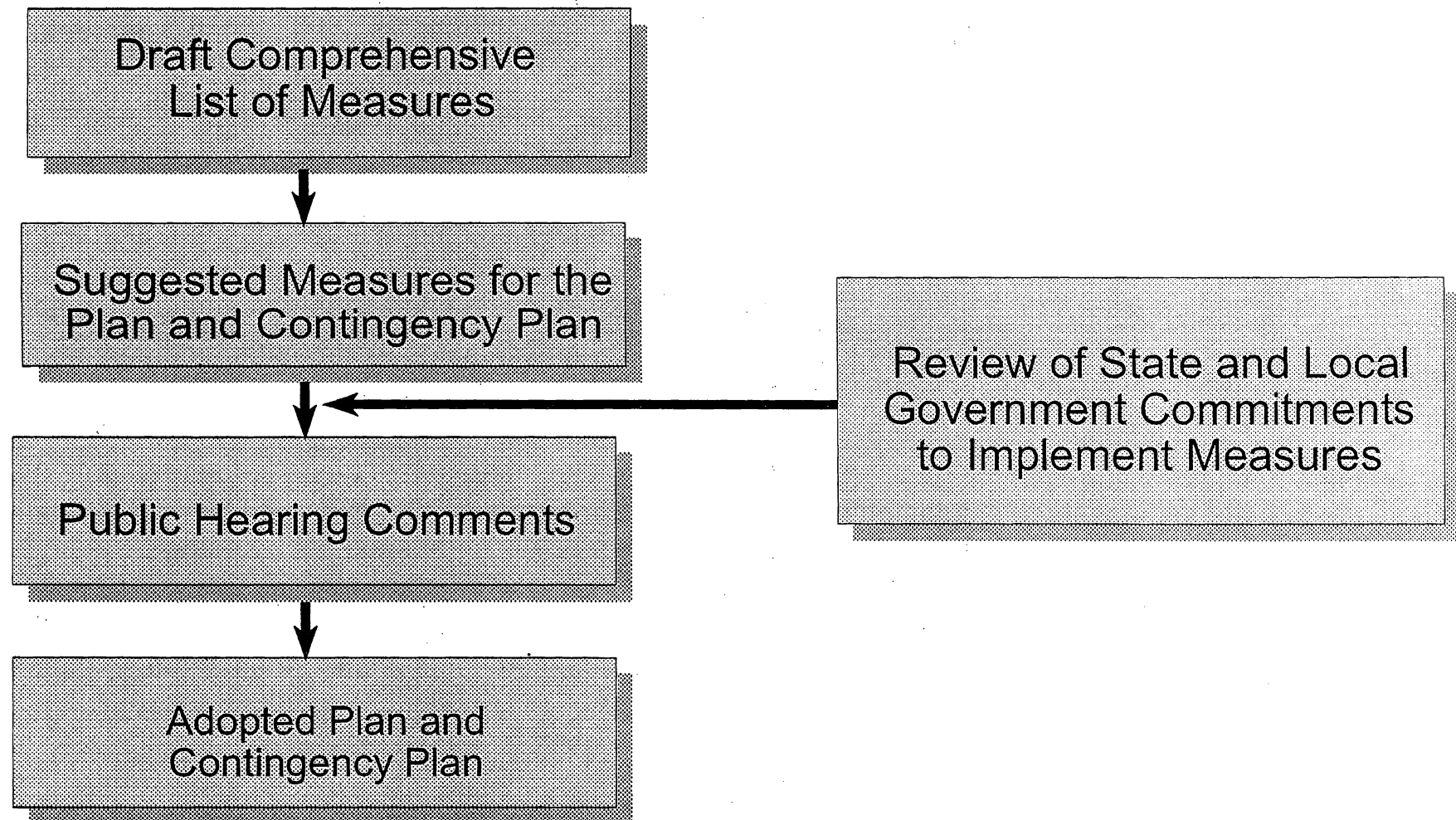
The purpose of this document is to present the MAG 2007 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area. The plan contains a wide variety of committed control measures from the State and local governments. The general measure selection process is described in Figure 1-1.

The MAG 2007 Five Percent Plan for PM-10 is composed of the following major sections:

1. Introduction (This Chapter) - Includes a general discussion of historical background and the outline of the MAG 2007 Five Percent Plan for PM-10.
2. Description of the Nonattainment Area - Includes a description of the nonattainment area; geography and climatic conditions; population; transportation system; congestion management process; demand and system management; and public transit system.
3. Assessment of Air Quality Conditions - Includes a discussion of the formation of particulate pollution; PM-10 emissions inventory; and air quality monitoring data and trend analysis.
4. Evaluation of PM-10 Particulate Matter Control Strategies - Includes a discussion of the evaluation of PM-10 particulate control measures and the preliminary draft comprehensive list of measures.
5. Suggested Measures for the Plan - Includes a discussion of the development of the Suggested List of Measures to Reduce PM-10 Particulate Matter.
6. The Adopted Plan and Implementation Schedule for the MAG 2007 Five Percent Plan for PM-10 - Includes a summary of the committed measures and implementation schedules; tracking plan implementation; and assurances that the State has the authority to implement the measures in the plan.
7. Demonstration of Annual Five Percent Reductions in PM-10 Emissions - Includes a discussion of the base case PM-10 emissions inventories; emissions reductions for the committed control measures; and demonstration of five percent reductions in PM-10 emissions per year through 2010.
8. Attainment Demonstration - Includes a discussion of the modeling attainment demonstration for the Salt River and Higley modeling domains; demonstration of reasonable further progress; contingency measures and attainment for the PM-10 nonattainment area.

Figure 1-1

MEASURE SELECTION PROCESS FOR MAG AIR QUALITY PLANS



9. Public Participation - Includes a description of the MAG decision making structure; MAG committees; and public meetings and public hearings conducted in the regional air quality planning process.
10. Commitments for Implementation of the MAG 2007 Five Percent Plan for PM-10 - Includes resolutions from local governments and other implementing entities; State legislation with commitments to implement air quality measures; and justification for nonimplementation of measures determined to be infeasible.

CHAPTER TWO

DESCRIPTION OF THE NONATTAINMENT AREA

The Maricopa County nonattainment area for particulates was formally designated in April 1974. As defined in the 1977 Clean Air Act, the term nonattainment area refers to locations which exceed any national ambient air quality standard for any pollutant based upon the data collected through air quality monitoring. A general description of the Maricopa County nonattainment area, including a discussion of the boundaries of the area, geography and climatic conditions, population, and the existing and planned transportation systems, is provided below.

NONATTAINMENT AREA BOUNDARIES

When the Environmental Protection Agency promulgated the PM-10 National Ambient Air Quality Standard on July 1, 1987, there was little PM-10 monitoring data available for EPA to use in determining the nonattainment area boundaries. In the August 7, 1987 Federal Register, EPA promulgated its policy of categorizing areas of the country into three groups based on the probability that an area's existing State Implementation Plan (SIP) would need to be revised to protect or attain the new PM-10 standard. Group I areas were those areas which EPA identified as having a strong likelihood of violating the PM-10 standard and requiring substantial SIP revisions.

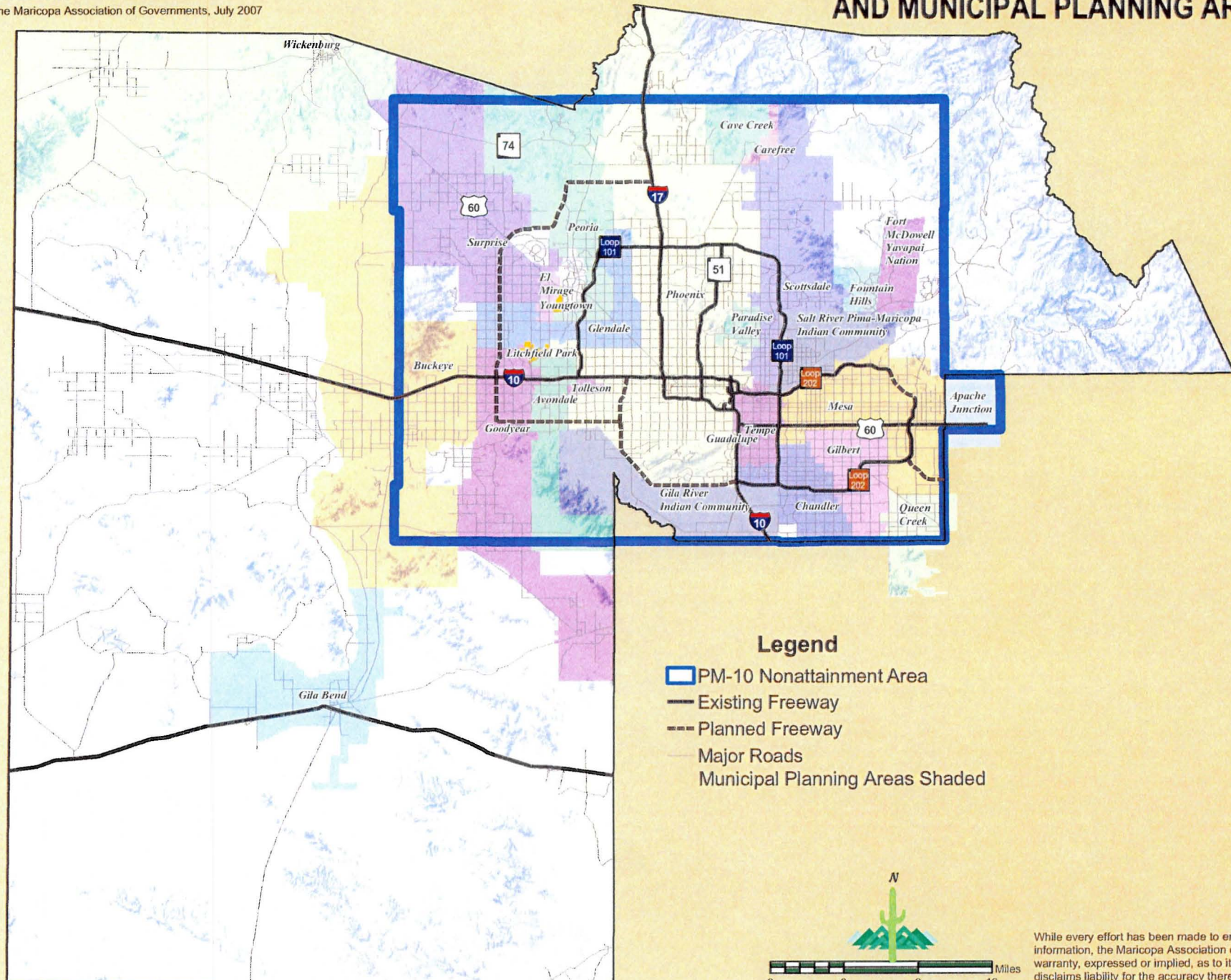
In the August 7, 1987 Federal Register, EPA identified the Group I area in Maricopa County, Arizona as the Phoenix Planning Area. In the October 31, 1990 Federal Register, EPA published technical corrections modifying the boundaries of certain areas of concern. The designation of the nonattainment area boundary is documented in the EPA letter dated September 11, 1991.

In the October 1990 Federal Register the area was defined as "The rectangle determined by, and including, T6N, R3W; T6N, R7E; T2S, R3W; T2S, R7E; T1N, R8E." The nonattainment area is generally encompassed by 259th Avenue on the west, Hunt Highway on the south, Meridian Road on the east and a boundary approximately six miles north of Carefree Highway on the north (see Figure 2-1). This area contains portions of the municipal planning areas for twenty-two cities and towns in Maricopa County, the Fort McDowell, Gila River, and Salt River Pima-Maricopa Indian Communities, as well as unincorporated areas under the jurisdiction of Maricopa County. The PM-10 nonattainment area also contains a six by six mile section in Pinal County that encompasses a portion of the Apache Junction Municipal Planning Area which includes unincorporated areas under the jurisdiction of Pinal County.

When determining the new PM-10 nonattainment area in 1987, the Environmental Protection Agency included the City of Apache Junction, a small eastern portion of Apache Junction lies in Maricopa County and the western portion lies in Pinal County. Pinal County

Figure 2-1

**PM-10 NONATTAINMENT AREA
AND MUNICIPAL PLANNING AREAS**



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

worked with the Arizona Department of Environmental Quality on a separate PM-10 plan for that portion of the nonattainment area.

GEOGRAPHY AND CLIMATIC CONDITIONS

Due to its valley location, the nonattainment area has an elevation of 1,105 feet above mean sea level (MSL) and is almost completely surrounded by mountains. The Salt River Mountains are located on the southern border of the nonattainment area and rise to an elevation of 2,507 feet above MSL. To the northwest, the Phoenix Mountains have an elevation of 2,310 feet above MSL. The Estrella Mountains are located to the southwest and have an elevation of 3,320 feet above MSL. On the western boundary, the White Tank Mountains rise to an elevation of 4,026 feet above MSL and on the eastern boundary, the Superstition Mountains rise to an elevation of 4,620 feet above MSL.

There are five main rivers that run through the nonattainment area: the Salt River, Agua Fria River, Gila River, New River, and Verde River. These river beds are generally dry, except during torrential rainfall, which happens infrequently.

The climate in the nonattainment area is arid continental, experiencing extreme ranges in daily temperatures. Temperatures range from a mean of 55.5 degrees Fahrenheit in December to a mean of 94.8 degrees Fahrenheit in July; the annual mean temperature is 74.2 degrees Fahrenheit. The sun shines approximately 85 percent of the time and the annual average rainfall is 8.29 inches. Most of the rainfall occurs from December through March and during the months of July and August. (Source: National Oceanic & Atmospheric Administration National Data Centers.)

In general, the morning direction for the prevailing winds in the nonattainment area is from east (southeast) to west (southwest). However, wind direction can change in the afternoon to a more westerly direction. The average annual wind speed is 6.2 miles per hour.

POPULATION

In September 2005, the United States Census Bureau conducted a Special Survey of Maricopa County. The purpose of the Survey was to capture the region's rapid population growth since the last decennial census, which was conducted in 2000. Based on the Survey, the population for Maricopa County on July 1, 2005 was 3,681,025. A comparison of the 2005 population figure with the 2000 population figure of 3,096,600 indicates that population has increased by 18.9 percent over the five year period. This area has experienced a high rate of population growth, which is characteristic of metropolitan areas located in the sunbelt.

According to the population projections approved by the MAG Regional Council in May 2007, Maricopa County will grow significantly in the future (see Table 2-1). The 2010, 2020, and 2030 population projections are 4,216,499, 5,230,300, and 6,135,000, respectively. These figures represent a population increase of 14.5, 42.1, and 66.6 percent respectively from 2005. (Source: Socioeconomic Projections of Population,

TABLE 2-1**TOTAL RESIDENT POPULATION BY MUNICIPAL PLANNING AREA, MARICOPA COUNTY, JULY 1, 2005 AND PROJECTIONS JULY 1, 2010 TO JULY 1, 2030**

MPA	2005	2010	2020	2030
Avondale	70,160	83,856	105,989	123,265
Buckeye	32,735	74,906	218,591	419,146
Carefree	3,654	4,418	5,816	6,097
Cave Creek	4,845	5,781	7,815	9,656
Chandler	236,073	265,107	282,991	283,792
County Areas	80,661	87,434	107,441	159,312
El Mirage	31,935	34,819	38,620	38,717
Fountain Hills	24,347	27,166	33,331	33,810
Fort McDowell	824	839	1,037	1,239
Gila Bend	2,118	2,575	3,950	9,074
Gila River	2,742	2,790	2,941	3,410
Gilbert	178,708	218,009	285,819	300,295
Glendale	257,891	279,807	315,055	322,062
Goodyear	47,520	71,354	174,521	299,397
Guadalupe	5,555	5,790	5,982	5,983
Litchfield Park	6,787	8,587	10,305	10,510
Mesa	486,296	518,944	565,693	584,866
Paradise Valley	14,136	14,790	15,224	15,352
Peoria	141,441	172,793	236,154	306,070
Phoenix	1,510,177	1,695,549	1,990,450	2,201,843
Queen Creek	19,879	34,506	55,529	72,947
Salt River	6,822	7,087	7,308	7,425
Scottsdale	234,515	249,341	269,266	286,020
Surprise	93,356	146,890	268,359	401,458
Tempe	165,740	177,771	191,881	197,970
Tolleson	6,491	7,748	9,646	10,193
Wickenburg	9,606	11,022	13,311	17,732
Youngtown	6,011	6,820	7,275	7,359
Total County	3,681,025	4,216,499	5,230,300	6,135,000

Notes:

- Total resident population includes resident population in households and resident population in group quarters (dorms, nursing homes, prisons and military establishments)
- These projections include the Maricopa County portion of Peoria, Queen Creek, and Gila River Indian Community only.
- For complete notation on this series please refer to Caveats for Socioeconomic Projections 2007.
- The City of Apache Junction which became a MAG member in 2002, had a resident population of approximately 40,000 in the year 2000. MAG had assembled databases and compiled placeholder projections in 2003 based on their input for portions of Pinal County. Based upon their input, the population of Apache Junction is projected to be: 78,000 in 2010; 122,000 in 2020; 142,000 in 2025; and 157,000 in 2030.

Housing and Employment by Municipal Planning Area and Regional Analysis Zone. May 2007.)

TRANSPORTATION SYSTEM

The transportation system in the nonattainment area is comprised of freeways, expressways, arterials, collectors, and local streets. In addition, the region is served by public transit systems, which are discussed later in this chapter. Table 2-2 illustrates the breakdown of travel by roadway facility type within the nonattainment area. These estimates were derived from the MAG EMME/2 Travel Demand Model.

As estimated by MAG travel demand models, the total regional vehicle miles traveled (VMT) per average weekday within the nonattainment area will grow from 95.2 million in 2007 to 161.7 million in 2028, an increase of 70 percent (see Figure 2-2). As indicated in Table 2-2 and Figure 2-2, facilities classified as arterial will continue to carry the greatest share of travel, 46-47 percent of all VMT. Facilities such as freeways and expressways will accommodate 39-42 percent of total travel. The remaining 11-13 percent of VMT will be carried by collector and local streets.

Increases in population and vehicle miles traveled have contributed to traffic congestion at a number of intersections throughout the MAG area. At the same time, additional roadway capacity has helped to mitigate the impacts of growth in travel demand. Locations of current and future congestion are illustrated in Figures 2-3 and 2-4, respectively.

On November 2, 2004, the voters of Maricopa County passed Proposition 400, which authorized the continuation of the existing half-cent sales tax for transportation in the region. This action provides a 20-year extension of the half-cent sales tax through calendar year 2025 to implement projects and programs identified in the MAG Regional Transportation Plan (RTP). The previous half-cent sales tax for transportation was approved by the voters of Maricopa County in 1985 through Proposition 300, and expired on December 31, 2005. The current half-cent sales tax extension approved through Proposition 400 went into effect on January 1, 2006.

As specified in A.R.S. 42-6105.E, 56.2 percent of all sales tax collections will be distributed to freeways and highways; 10.5 percent will be distributed to arterial street improvements; and 33.3 percent of all collections will be distributed to transit. Total half-cent revenues from FY 2008 through FY 2028 are projected to be approximately \$17.9 billion.

Over the next two decades the existing freeway system will undergo significant improvement as shown in Figure 2-5. Based on the MAG Regional Transportation Plan 2007 Update, funding sources for these improvements include the half-cent sales tax; Arizona Department of Transportation funds; Federal Congestion Mitigation and Air Quality and Surface Transportation Program funds; Statewide Transportation Acceleration Needs funds; bond proceeds; and other funding.

TABLE 2-2
2007 AVERAGE WEEKDAY VEHICLE MILES TRAVELED
FOR THE PM-10 NONATTAINMENT AREA

Facility Type	Urban	Percent	Rural	Percent	Total	Percent
Freeway	31,635,881	36.06%	3,322,555	44.23%	34,958,436	36.70%
Expressway	1,315,929	1.50%	1,122,368	14.94%	2,438,297	2.56%
Arterial	42,975,435	48.98%	2,236,869	29.78%	45,212,304	47.47%
Collector	2,465,937	2.81%	252,845	3.37%	2,718,781	2.85%
Local	9,341,644	10.65%	577,535	7.69%	9,919,179	10.41%
Total	87,734,826	100.00%	7,512,171	100.00%	95,246,997	100.00%

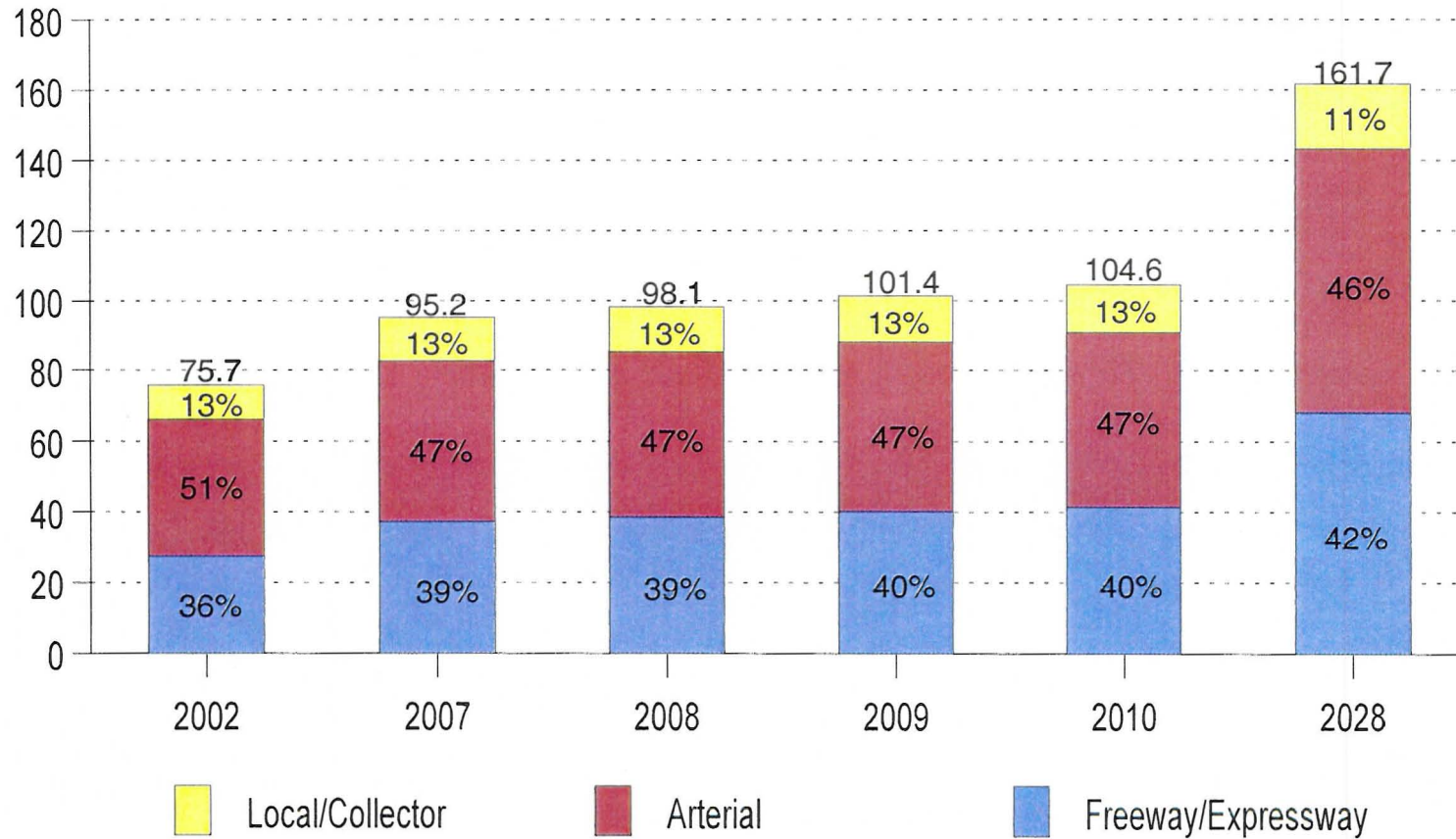
Note: Totals shown may not equal the sum of individual values due to independent rounding.

Source: MAG EMME/2 Travel Demand Model.

FIGURE 2-2

**REGIONAL AVERAGE WEEKDAY TRAVEL PROJECTIONS BY FACILITY TYPE
FOR THE PM-10 NONATTAINMENT AREA**

Vehicle Miles of Travel
Per Day in Millions



Note: Totals shown may not equal the sum of individual values due to independent rounding.
Source: MAG EMME/2 Travel Demand Model.

Figure 2-3



2006 Base Year Network:

PM Peak Period Hours of Level of Service E & F

Freeway

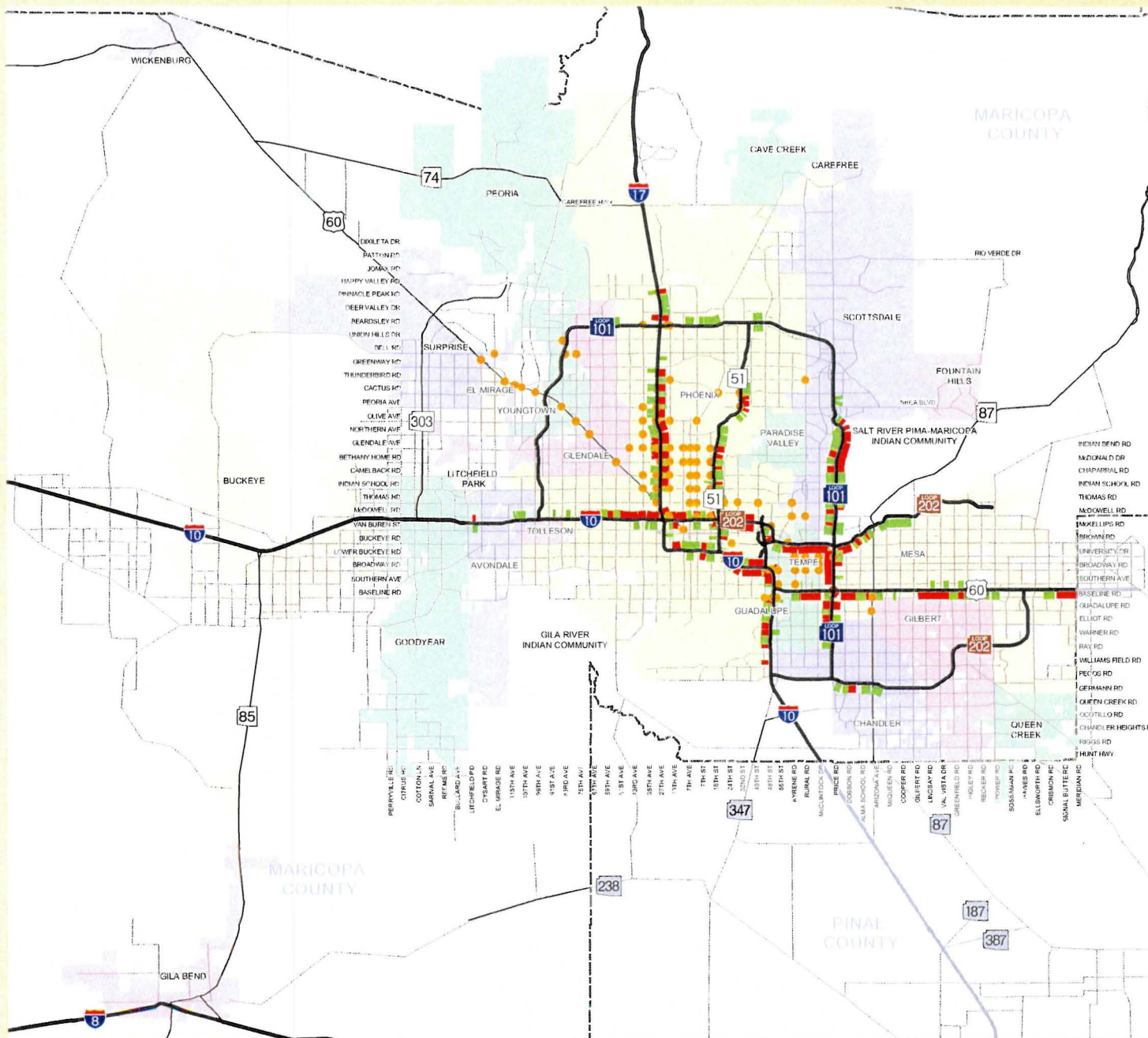
- Less than 1
- Greater than 1

Intersections

- Level of Service E & F

Other Features

- County Boundary
- Freeways
- Highways
- Other Roads



SOURCE: Regional Transportation Plan 2007 Update

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Figure 2-4



2028 RTP Network:

PM Peak Period Hours of Level of Service E & F

Freeway

- Less than 1
- Greater than 1

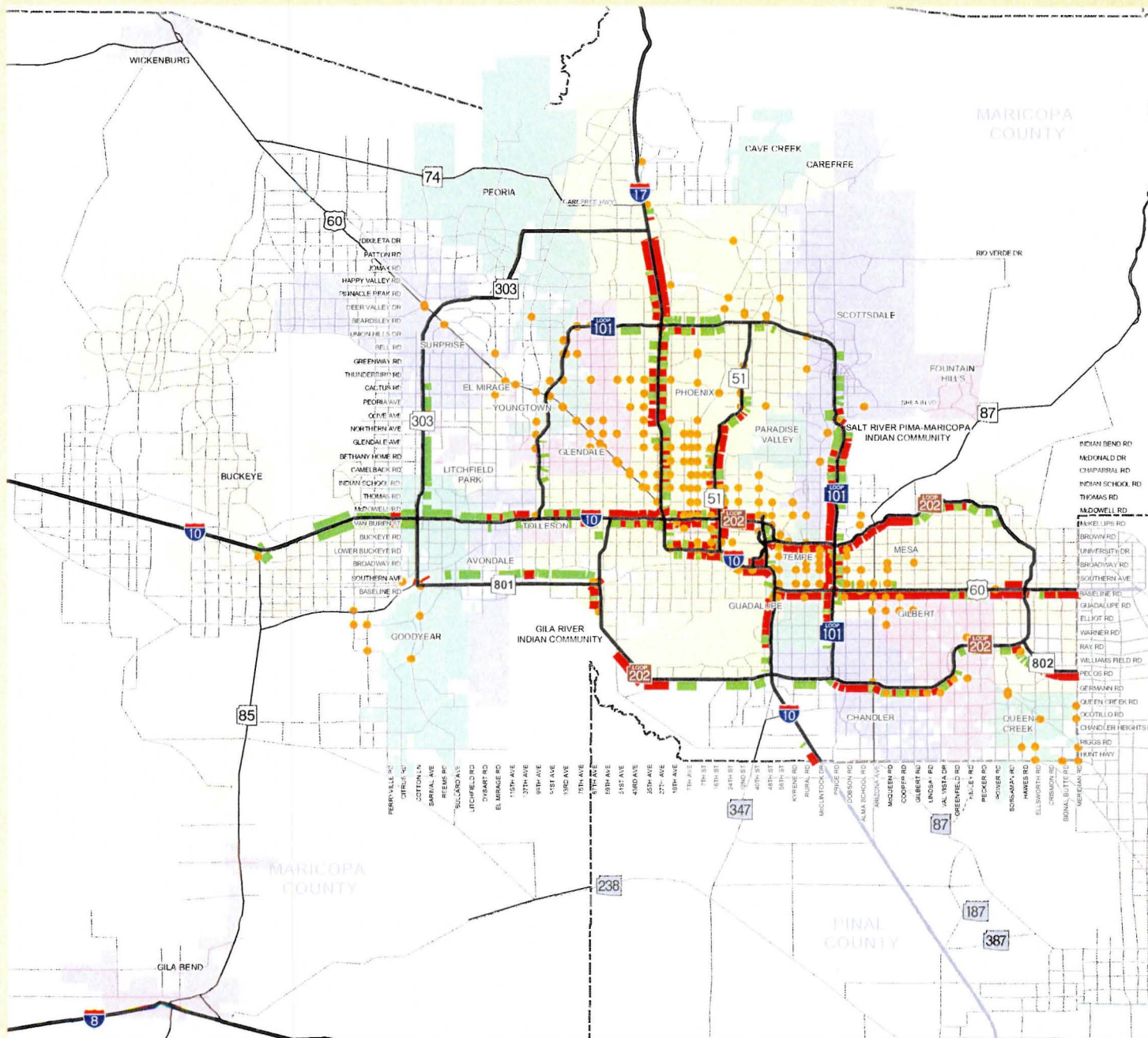
Intersections

- Level of Service E & F

Other Features

- County Boundary
- Freeways
- Highways
- Other Roads

Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.



SOURCE: Regional Transportation Plan 2007 Update

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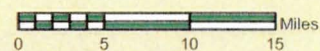


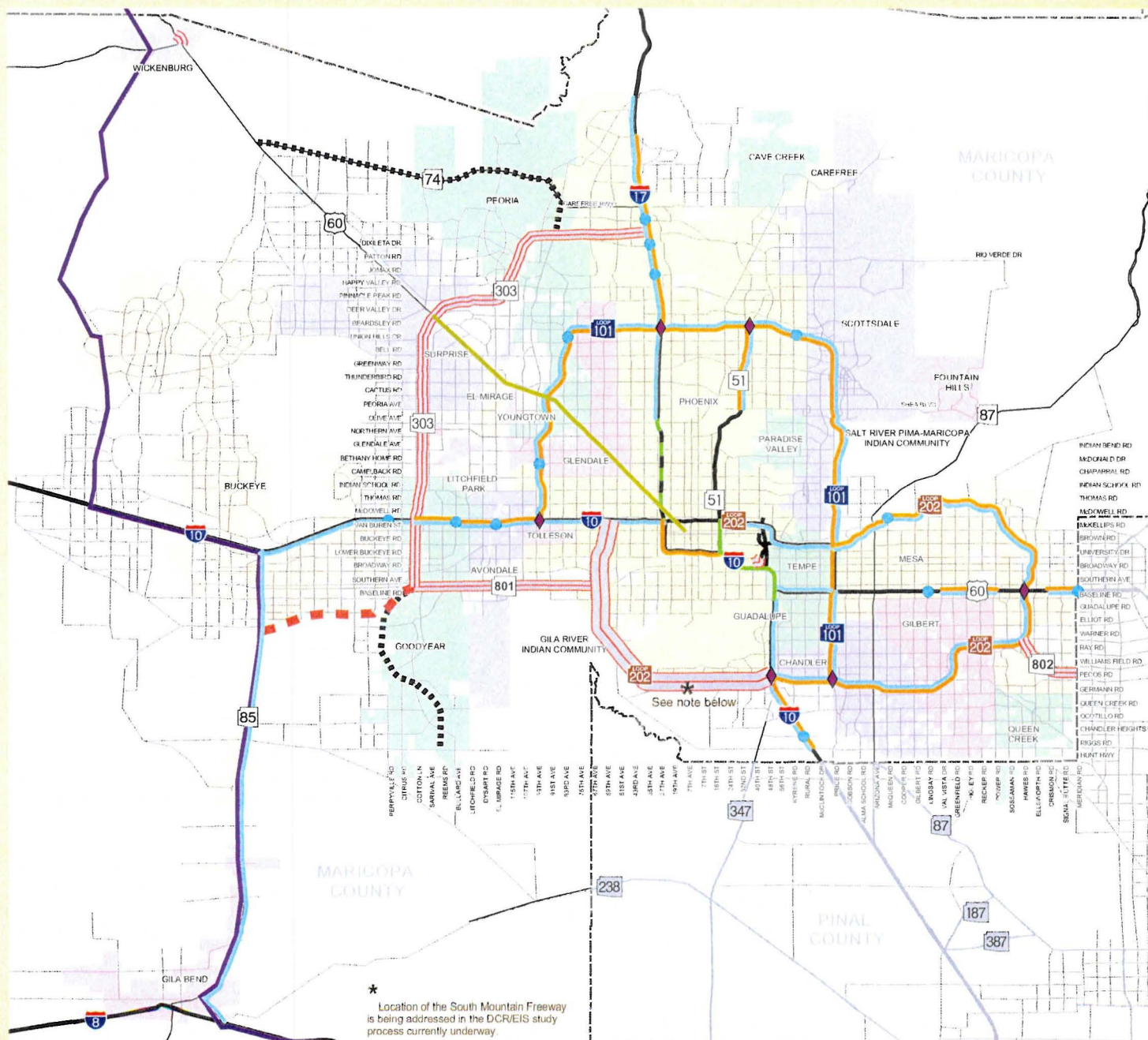
Figure 2-5



RTP Planned Freeway/Highway Improvements

- New Traffic Interchange
- New High Occupancy Vehicle Ramp Connection
- Grand Avenue Corridor Improvements
- New High Occupancy Vehicle Lanes
- New General Purpose Lanes
- Corridor Capacity Improvements
- Long Term Capacity Improvements
- New Freeway/Highway Construction
- Interim Corridor Development
- Proposed CANAMEX Corridor
- Right of Way Preservation
- County Boundary
- Existing Freeway
- Other Roads

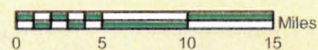
Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.



* Location of the South Mountain Freeway is being addressed in the DCR/EIS study process currently underway.

SOURCE: Regional Transportation Plan 2007 Update

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Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG).

The major freeways presently located in the nonattainment area are: Interstate 17 (Black Canyon Freeway), Interstate 10 (Maricopa Freeway), State Route 51 (Piestewa Freeway), US 60 (Superstition Freeway), Loop 101 (Agua Fria, Pima, and Price Freeways), and Loop 202 (Santan and Red Mountain Freeways). The new freeway/highway corridors in the RTP include Loop 202 (South Mountain Freeway), Loop 303 (Estrella Freeway), State Route 802 (Williams Gateway Freeway), and State Route 801 (I-10 Reliever). A segment of the State Route 153 (Sky Harbor Expressway) is also covered in this group. In 2007, the freeway and expressway system will carry 39 percent of vehicular travel in the nonattainment area.

The arterial street network is also a major component of the regional transportation system in the region. In 2007, this element will carry 47 percent of the vehicle miles traveled in the nonattainment area and provides access to adjacent land uses. Like the freeway system, the arterial network will be undergoing a number of regionally funded improvements in the future (see Figure 2-6).

CONGESTION MANAGEMENT PROCESS

Although there has been a significant expansion of the freeway system, the construction of freeways alone will not solve traffic congestion problems in the long term. Locations of current and future congestion are illustrated in Figures 2-3 and 2-4. Two primary factors contributing to traffic congestion within the MAG region are an increasing population and a vigorous economy. These factors have resulted in high levels of internal metropolitan growth, and have also brought significant levels of urban development to previously undeveloped lands on the urban fringe. Such internal and peripheral growth has created greater travel demand throughout the region, bringing about higher traffic volumes and congestion on the existing freeway and arterial roadway network. As part of the regional transportation planning effort, MAG maintains a congestion management process to improve traffic flow and mitigate congestion throughout the greater metropolitan area.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) called for Congestion Management Systems (CMS) within transportation management areas, which are urbanized areas over 200,000 population. In response to ISTEA, MAG has maintained an ongoing process that provides for an overall analysis of various congestion management strategies and their applicability to the region. As part of this effort, MAG has prepared a Transportation Improvement Program Guidance Report that provides a systematic examination and review of congestion, safety, air quality, socioeconomic data and conditions, system preservation, and a number of other factors in developing and implementing a regional Transportation Improvement Program (TIP) and RTP. MAG, through the annual review, approval and implementation of numerous plans, including the RTP, and the development of the Five-Year TIP, promotes methods that reduce congestion throughout the region.

On August 10, 2005, the President signed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This legislation authorized the nation's surface transportation programs for highways, highway safety, and transit over

Figure 2-6

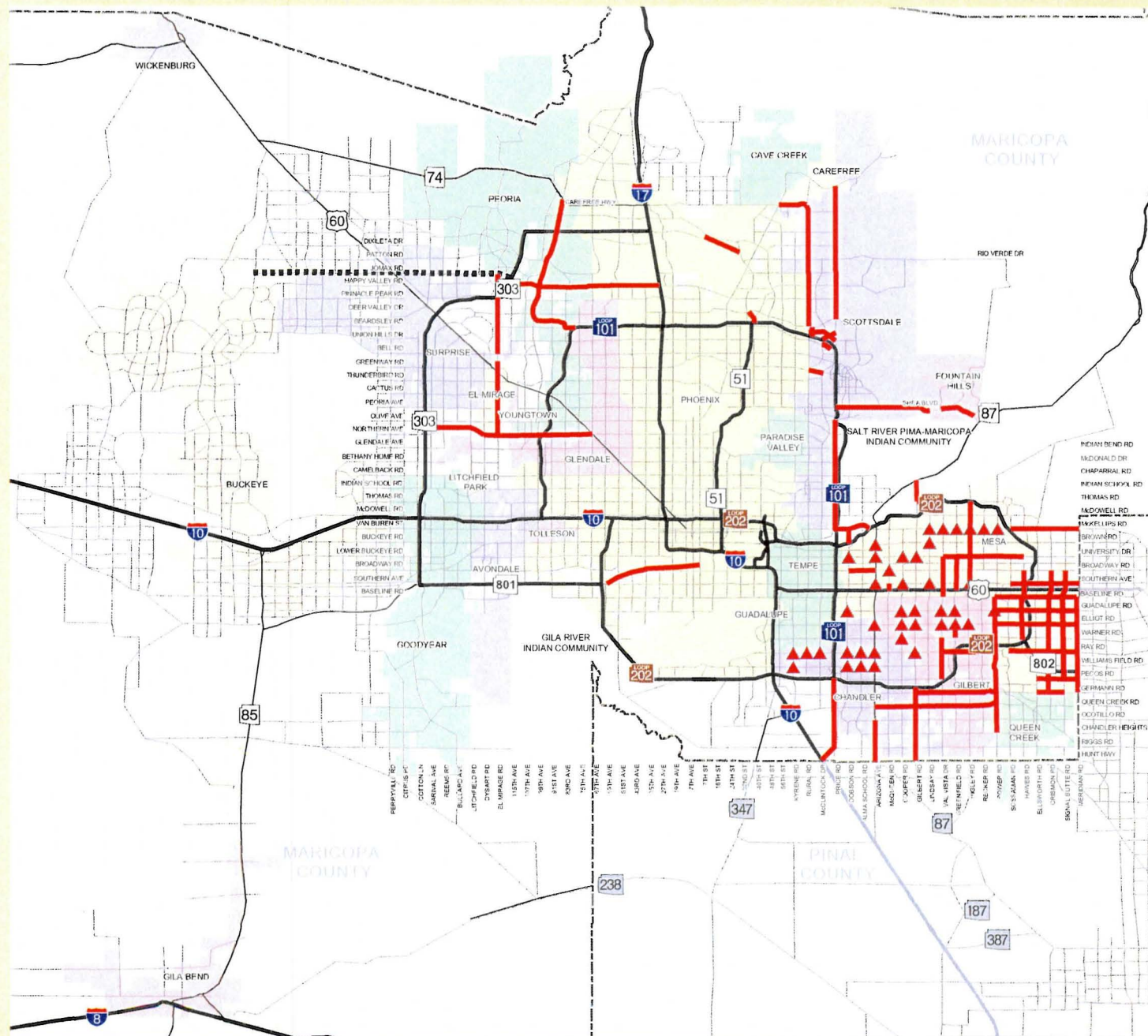


RTP Planned Arterial Street Improvements

- ▲ Improved Intersections
- New/Improved Arterials
- Right of Way Preservation
- County Boundary
- Freeways
- Highways
- Other Roads

Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG).



SOURCE: Regional Transportation Plan 2007 Update

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0 5 10 15 Miles



a five year period between 2005 and 2009. As part of this Act, guidance was provided on the desired features of the congestion management process in transportation management areas. Through the development and implementation of the MAG CMS, an ongoing congestion management process has been established that complies with the features identified in SAFETEA-LU (2005). It is anticipated that this process will undergo continuing enhancement and refinement.

DEMAND AND SYSTEM MANAGEMENT

Transportation Demand Management (TDM) programs encourage reductions in travel demand within the transportation system. These programs promote alternative modes of travel, which include carpooling, vanpooling, walking, bicycling, alternative work schedules that reduce trips, telecommuting and compressed work schedules. Based on a recent survey, total alternate mode usage including telecommuting and compressed schedules is at 43 percent (2007 Transportation Demand Management Survey, WestGroup Research, March 2007). A number of the ongoing TDM programs in the region are described below.

The rideshare programs support efforts to carpool, and to use alternative modes of transportation and work schedules throughout the MAG region. Valley Metro Rideshare conducts a variety of services, including a free carpool/vanpool online ride matching service; the promotion of Single-Occupancy Vehicle (SOV) alternatives via the Clean Air Campaign; assistance to Transportation Coordinator Alliance groups; assistance to employers in the Maricopa County's Trip Reduction Program; administration of the Vanpool Program; and promotion of the Telecommuting Program. In addition, the Arizona Department of Administration's Travel Reduction Program offers carpool matching and other rideshare services to all State employees located in Maricopa County.

The Clean Air Campaign, an area wide public awareness program, is designed to reduce unnecessary vehicle use and has been ongoing since 1987, when it was initiated by the Phoenix Chamber of Commerce. The Clean Air Campaign is a public/private partnership with sponsors that include the Greater Phoenix Chamber of Commerce, the Arizona Department of Environmental Quality and Transportation, Maricopa County, MAG, and Valley Metro. The Campaign urges residents to reduce vehicle miles traveled during peak hours by using alternative modes or alternative work schedules at least one day a week.

Air quality improvement was the primary factor leading to the establishment of the Maricopa County Trip Reduction Program (TRP). Mandated by legislation in 1988, employers with 100 or more workers at a site began participating in this program in 1989. Participating employers are required to conduct an annual survey of the commuting modes of their employees, and prepare and implement a travel reduction plan to reduce the number of SOV trips and vehicle miles traveled. The program was amended in July 1994 to include employers with 50 or more employees. In the summer of 1996, a special session of the legislature passed an innovative enhancement to the TRP whereby employers would be allowed to implement several new "flexibility" strategies to meet TRP

goals. There are approximately 1,200 employers currently participating in the TRP Program.

The RPTA has provided vanpool service to interested commuters since 1987. The number of vanpools has increased from 34 in 1993 to 308 in June 2007. Vans owned by RPTA provide vanpool services for commuters who live and/or work in Maricopa County. Through an administrative services contract, Vanpool Services Incorporated (VPSI) provides insurance, vehicle maintenance, billing, and National Database reporting for the program.

Another approach to travel demand management is the formation of Transportation Coordinator Alliance (TCA) groups, which are groups of Transportation Coordinators from organizations involved with the TRP Program in the same geographical area. Through these informal groups, TCs share resources to promote alternative mode use, improve mobility, or implement trip reduction programs in their local areas. There are currently ten TCAs in the MAG region.

With the advent of new technology and the change to a knowledge-based economy, a growing number of employers are allowing their employees to work in a location other than the central office. With telecommuting, employees can be linked to an office by a personal computer. Employees may telecommute either on a full-time or on a part-time basis, with most telecommuters working at or near home one or two days per week. By working at home, or at a satellite work center, the commute trip is eliminated or shortened. The average percentage of employees reportedly allowed to telecommute at Valley businesses increased significantly, to 35 percent in 2006 from 23 percent in 2004. The percent of those actually telecommuting also increased significantly, to 30 percent from 17 percent in 2004 (Employer Telecommuting Study, WestGroup Research, June 2006).

Transportation System Management (TSM) programs help to accommodate the safe and efficient movement of people and vehicles within the transportation system. The full spectrum of transportation technology applications, known as Intelligent Transportation Systems (ITS), now forms the basis for these programs. Intelligent Transportation Systems involve the application of advanced sensors, computers, electronics and communication technologies in an integrated manner, along with management strategies, to increase the safety and efficiency of the surface transportation system.

Since 1996, MAG has taken progressive steps toward mainstreaming the development of regional ITS within the transportation planning process. All planning activities for public sector owned regional ITS infrastructure are currently coordinated and led by MAG. In April 2001, MAG approved a comprehensive ITS Strategic Plan and ITS Architecture for the region. Oversight for this Plan was provided by a group of Regional ITS Stakeholders consisting of the MAG ITS Committee and other regional ITS stakeholders. This Plan currently provides direction to ITS implementation within the region.

The Arizona Department of Transportation is utilizing an integrated package of ITS strategies commonly referred to as a Freeway Management System (FMS). The regional

FMS first became operational in 1996 and provides surveillance, incident management and traveler advisory functions. As part of this program, a real-time freeway speed map is available on the Internet at www.az511.com. This website is heavily utilized by local television and radio traffic reporters as well as members of the public to obtain freeway condition information. Freeway condition information is also available via the telephone based 5-1-1 traveler information system. The coverage of the regional FMS, as of late 2006, is approximately 100 miles. It is estimated that by 2023 the total FMS coverage of regional freeways will be approximately 225 miles.

PUBLIC TRANSIT SYSTEM

Publicly-funded fixed route transit service is provided in 15 communities in the MAG Regional Planning Area. The services are provided by private operators including Laidlaw Transit Services; Veolia/Regional Public Transportation Authority (RPTA), Veolia/Tempe, Veolia/Phoenix; Total Transit; and Ajo Transportation. Funding for these services is provided by the cities of Avondale, Chandler, Gilbert, Glendale, Mesa, Phoenix, Queen Creek, Scottsdale, Surprise, Tempe, Tolleson and Regional Sales Tax funds.

Sixty-three local routes, 19 express routes, and five circulator routes are operated throughout the region each weekday. Transit service is operated weekdays for approximately 15 hours from 5 a.m. to 8 p.m. The exact hours vary by route, with some service beginning the first trip as early as 4:30 a.m. and some running as late as 12:30 a.m. On Saturdays service hours are from 6 a.m. to 8 p.m., with variations by route. Sunday service is provided on some, but not all routes.

Nine dial-a-ride systems operate within Maricopa County including Glendale Dial-a-Ride, Maricopa County/Red Cross Special Transportation Services (STS), East Valley Dial-a-Ride operated by Veolia/RPTA, Peoria Dial-a-Ride, El Mirage Dial-a-Ride, Phoenix Dial-a-Ride operated by Veolia/Phoenix, Sun Cities Area Transit System (SCAT), Surprise Dial-a-Ride, and Tempe/Scottsdale Dial-a-Ride operated by Mayflower Contract Services. Seven of these dial-a-rides operate within the area in which fixed route bus service is also offered. These dial-a-rides, with scheduled modifications, fully comply with all Americans with Disabilities Act (ADA) complementary paratransit provisions for eligible persons. All dial-a-ride systems plan to continue demand response service to existing passengers, in addition to serving persons certified as ADA paratransit eligible.

The exact hours of dial-a-ride operation vary by system. However, most systems operate weekday service between 7 a.m. and 5 p.m., with some service being provided as early as 6 a.m. and as late as 7 p.m. Saturday service is provided by four of the dial-a-ride systems, while service on Sundays and holidays is limited to East Valley Dial-a-Ride (Mesa service only), Phoenix Dial-a-Ride, and SCAT. In addition, ADA complementary paratransit is provided by six dial-a-ride systems, with days and hours of operation parallel to fixed route service.

The Maricopa County/American Red Cross Special Transportation Services operates a prescheduled service. Transportation is provided for qualified persons for specific trip

purposes in portions of Maricopa County unserved by other systems. This provides outlying areas of the region with needed transportation services.

Vans owned by RPTA provide vanpool services for commuters who live and/or work in Maricopa County. Through an administrative services contract, VPSI provides insurance, vehicle maintenance, billing, and National Database reporting for the program through a dedicated staff of four. Each Valley Metro Vanpool serves a group of 6-15 riders by providing a fully insured and maintained Agency owned van for which the users pay a monthly fare based on mileage, number of riders and type of van. Each vanpool is required to have three volunteer drivers, one primary and two alternates from the group. Operational decisions about the vanpool such as the route to work, pick up spots, times of operation, fare payment, etcetera, are made by the riders. The RPTA provides two guaranteed rides home per year for each vanpool rider. The vanpool agreement is not a lease or contract and vanpools may terminate with a thirty-day notice.

Fixed route, scheduled service is provided to an area of approximately 600 square miles within the MAG Regional Planning Area by Veolia/RPTA, Veolia/Phoenix, Veolia/Tempe, and Laidlaw. In FY 2005-06, a total of 55,832,297 passengers rode these systems. During this period, 26,133,953 miles were driven for a total of 1,617,664 hours by fixed route service vehicles. This does not include circulators, express routes, or dial-a-ride. Total boardings for all systems in FY 05-06 were 61,067,461. During this period, 40,087,019 miles were driven for a total of 2,981,052 hours.

Valley Metro fixed route service is provided by four different entities:

- During FY 2005-06, the City of Phoenix Transit System carried a total of 44,182,683 passengers. The system logged 17,166,702 miles and a total of 941,752 hours were spent in service during the year.
- Veolia/RPTA transported 6,484,886 passengers during FY 2005-06. Veolia/RPTA buses traveled 4,956,352 miles in 321,379 hours during FY 2005-06.
- Veolia/Tempe reported 5,063,284 passenger boardings in FY 2005-06. They provided 3,868,790 miles of service in 350,657 hours during FY 2005-06.
- Glendale GUS reported 101,444 passenger boardings in FY 2005-06. They provided 142,109 miles of service in 3,876 hours during FY 2005-06.

Demand response and ADA paratransit service is provided in the MAG Regional Planning Area by Glendale Dial-a-Ride, Maricopa County STS, Paradise Valley Dial-a-Ride, El Mirage Dial-a-Ride, Peoria Dial-a-Ride, Phoenix Dial-a-Ride, Southwest Valley Dial-a-Ride, SCAT, Surprise Dial-a-Ride and East Valley Dial-a-Ride. In FY 2005-06, 938,879 passengers boarded these systems. In this same fiscal year, 658,989 hours of service were provided.

The Valley Metro Vanpool program has experienced significant growth from a modest beginning in 1989. There were only 34 vanpools in 1993, the first recorded record of vanpools on the road. At the end of June 2007, there were 308 vanpools operating in Maricopa County, all of which commute into the Phoenix Metropolitan area with the exception of a handful that commute to areas outside of the area, Palo Verde, Hayden, and Casa Grande. During FY 06-07, the Valley Metro Vanpool Program experienced a growth rate of three percent. June 2007 statistics reflect that Valley Metro Vanpools commute an average of 70.6 miles daily, or 448,161 miles a month, and save 3,911,490 vehicle miles not traveled in single occupancy vehicles. Those same 308 vanpools save 136,902 pounds of pollution from being emitted into the Valley's air monthly. The Valley Metro Vanpool fleet travels at a 93 percent capacity; and for FY 06-07, the fare box ratio was over 100 percent.

In 2003, the MAG Regional Council adopted the RTP, which provided a blueprint for a series of freeway, arterial street, and transit improvements that would be implemented in the valley over the next twenty years. This was followed by the passage, in November 2004, of Proposition 400 which reauthorized an existing county-wide sales tax to 2025. The sales tax will provide a regional funding source to fund implementation of the transportation improvements identified in the RTP. The Regional Bus Rapid Transit/Express transit services and the Regional Grid transit services are depicted in Figures 2-7 and Figure 2-8, respectively. The transit program identified in the RTP will supplement locally funded programs identified in the cities of Phoenix, Tempe, Mesa, Scottsdale, Glendale, Peoria and Surprise.

The Light Rail Transit (LRT) Minimum Operating Segment (MOS) is currently under construction. The approved alignment for the LRT MOS starter segment extends from Bethany Home Road and 19th Avenue into downtown Phoenix; from downtown Phoenix to downtown Tempe and Arizona State University; and continuing to the intersection of Main Street and Sycamore in Mesa. The MOS will be completed by December 2008 and service will be initiated through a single opening of the entire system at that time.

The RTP includes regional funding for the completion of six additional LRT segments on the system. These include a five-mile extension to Metrocenter; a five-mile extension to downtown Glendale, an 11-mile extension along I-10 west to 79th Avenue; a 12-mile extension to Paradise Valley Mall; a two-mile extension south of the MOS on Rural Road to Southern Avenue; and a 2.7-mile extension from the east terminus of the MOS to Mesa Drive. In total, the Light Rail/High Capacity Corridor extensions account for 37.7 miles of the 57.7-mile system. Figure 2-9 depicts the planned LRT system and eligible high capacity corridors envisioned for the region.

Figure 2-7

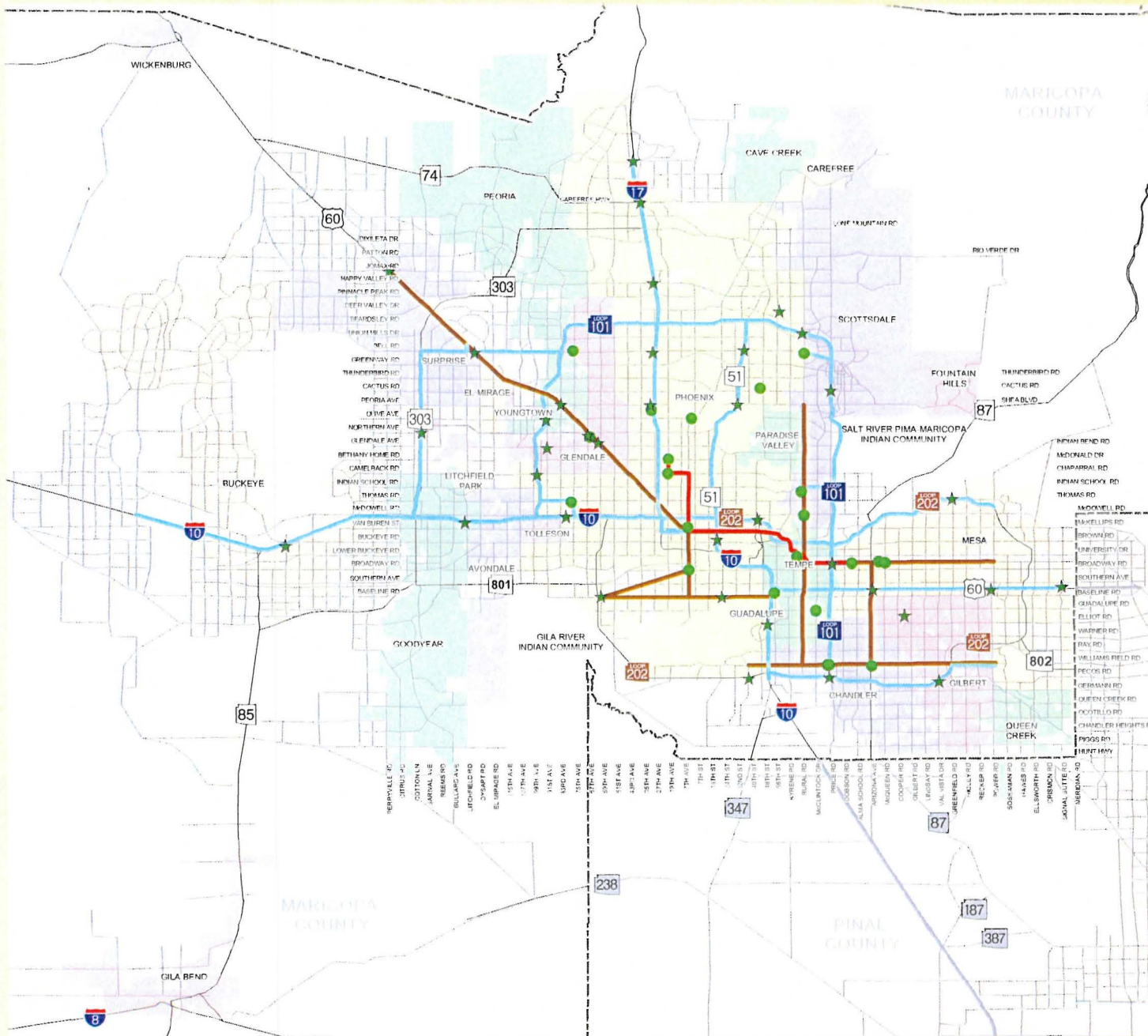


RTP Planned Bus Rapid Transit (BRT) System

- Approved Minimum Operating Segment
- Arterial BRT Routes
- Freeway BRT Routes
- ★ Planned or Existing Park-and-Rides
- Planned or Existing Transit Centers
- County Boundary
- Freeways/Highways
- Other Roads

Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG).



SOURCE: Regional Transportation Plan 2007 Update

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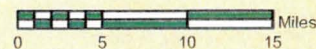
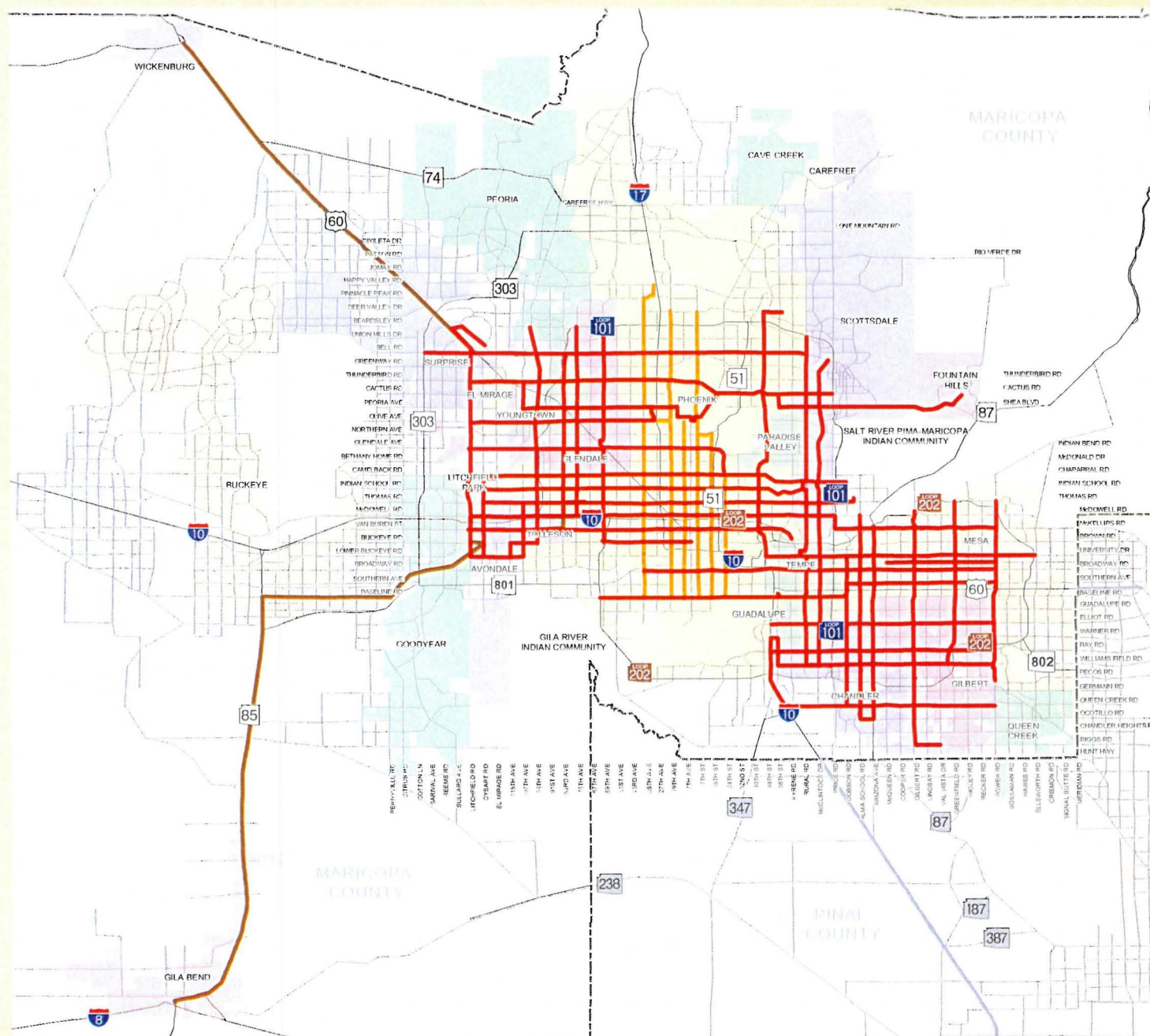


Figure 2-8



RTP Planned Regional Grid Bus System

- Regional Grid Routes
- Grid Routes Funded by City of Phoenix
- New Rural Routes
- County Boundary
- Freeways/Highways
- Other Roads



Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.

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**MAP
AREA**

SOURCE: Regional Transportation Plan 2007 Update

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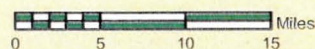
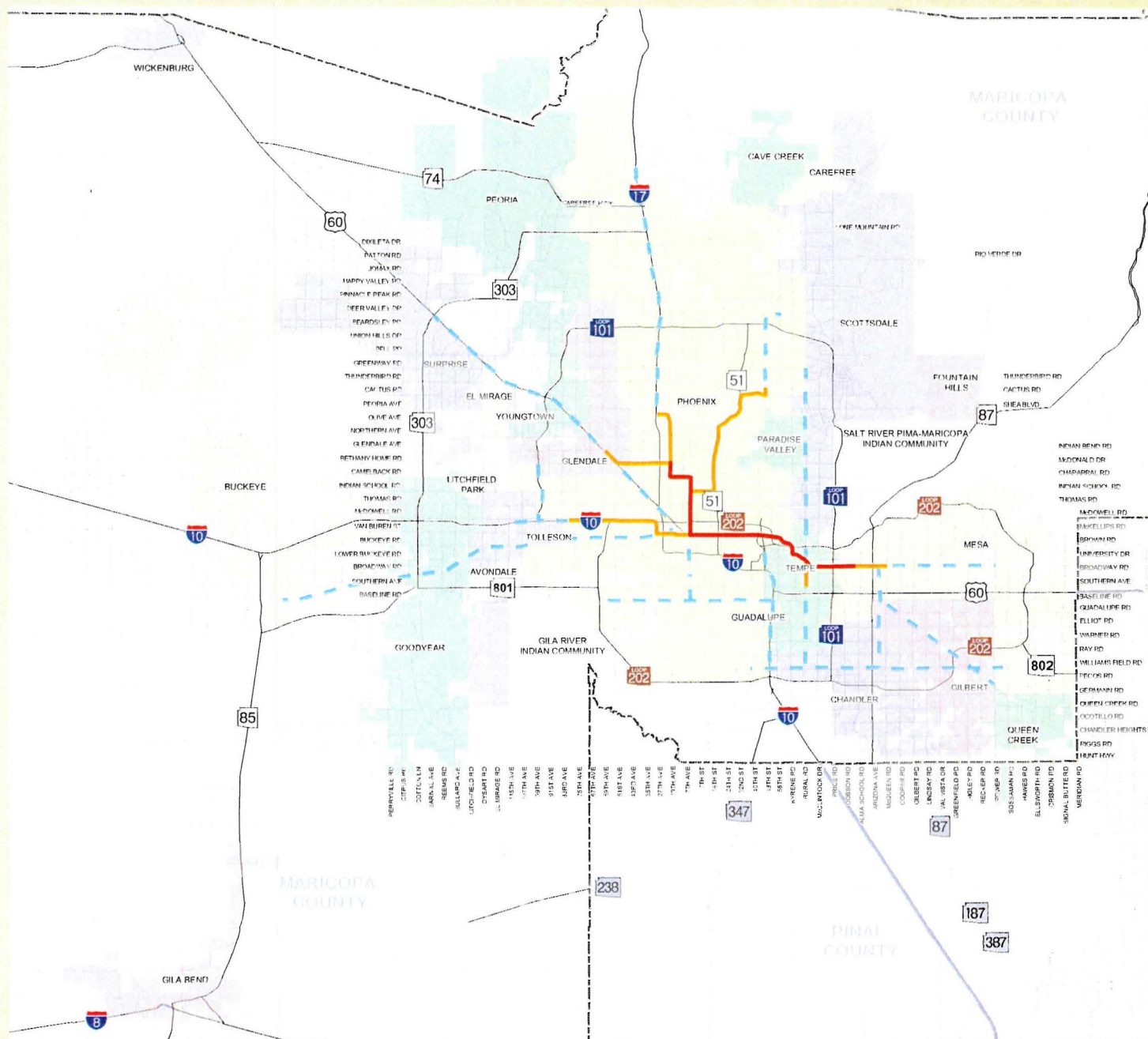


Figure 2-9



RTP Planned Light Rail Transit (LRT)/ High Capacity Transit

- Approved Minimum Operating Segment
- Light Rail/High Capacity Corridor Extensions
- Eligible High Capacity Corridors
- County Boundary
- Freeways/Highways
- Other Roads



Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.

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SOURCE: Regional Transportation Plan 2007 Update

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CHAPTER THREE

ASSESSMENT OF AIR QUALITY CONDITIONS

Within the Maricopa County nonattainment area, PM-10 is a problem throughout the year. Particulate air pollution is composed of solid particles or liquid droplets which are small enough to remain suspended in the air. The smaller the size, the more likely the particles are to reach the innermost portions of the lungs and cause damage. Major concerns for human health from exposure to particle pollution include: increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; decreased lung function; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. The elderly, children, and people with heart and lung disease are especially sensitive to the effects of particulate matter. Particles that are 2.5 micrometers in diameter and smaller (PM-2.5) can lodge deep in the lungs and are believed to be the largest health risk. The EPA designated Maricopa County as an attainment area for PM-2.5 in September 2005.

In order to effectively reduce PM-10, it is important to assess air quality conditions in the PM-10 nonattainment area. This chapter presents a discussion of PM-10 formation, the Maricopa County Air Quality Department 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area, and air quality monitoring data.

FORMATION OF PM-10 PARTICULATE POLLUTION

The formation of PM-10 particulate pollution is dependent upon several factors. Among these factors are stagnant air masses, severe temperature inversions in the winter, high winds in the summer, and fine, silty soils characteristic of desert locations. In the nonattainment area, high PM-10 concentrations generally occur in September through March, on days with stagnant or near-stagnant conditions. High PM-10 concentrations can also occur during the summer and are generated primarily by wind entrainment of soil particles from disturbed surfaces.

The PM-10 in the arid Southwest largely consists of coarse particles (i.e., aerodynamic diameter greater than 2.5 microns but less than or equal to 10 microns) which are typically crustal in nature and derive mainly from windblown dust, resuspended road dust (from paved and unpaved roads), unpaved parking lots, disturbed vacant land, mining operations, construction, and agricultural activities (e.g., tilling and harvesting, travel on unpaved farm roads). Other components of particulate matter, such as sulfates, nitrates, and organic and elemental carbons, are typically found in the fine fraction of particulate matter (i.e., aerodynamic diameter less than or equal to 2.5 microns), but can also contribute to coarse particulate matter. Previous analyses of PM-2.5 data in the Phoenix area have shown that mobile source exhaust, burning, and industrial sources are important constituents of PM-2.5. The co-located PM-10 and PM-2.5 monitors at the Durango Complex site indicate that PM-2.5 readings on days with high PM-10 concentrations range from 6 to 15 percent of the PM-10 on high wind days and 14 to 22 percent on low wind

days. Therefore, the PM-10 problem in the nonattainment area is largely attributable to coarse particles, comprised primarily of geologic material.

PM-10 EMISSIONS INVENTORY

The Clean Air Act requires a comprehensive, accurate, and current inventory of actual emissions from all sources. In 2007, the Maricopa County Air Quality Department compiled a 2005 periodic emissions inventory which includes primary emissions of PM-10 and PM-2.5 as well as three particulate matter precursors: nitrogen oxides (NOx), sulfur dioxides (SOx) and ammonia (NH3). The inventory provides emission estimates for Maricopa County and the PM-10 nonattainment area. Maricopa County encompasses approximately 9,223 square miles and the PM-10 nonattainment area is about 2,888 square miles.

Emission sources included in the 2005 Periodic Emissions Inventory for PM-10 are Point Sources, Area Sources, Nonroad Mobile Sources, Onroad Mobile Sources, and Biogenic Sources. The inventory provides the typical daily emissions and annual emissions for these categories. Table 3-1 includes a breakdown of annual emissions for the PM-10 nonattainment area.

Collectively, the source categories are estimated to have contributed 84,752.70 (English) tons of PM-10; 17,519.78 tons of PM-2.5; 101,358.87 tons of NOx; 3,333.82 tons of SOx; and 17,025.62 tons of NH3 in 2005 in the PM-10 nonattainment area. A complete description of these sources and the corresponding methodology used to calculate the emissions for 2005 are included in the 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area, May 2007. This inventory is provided in Appendix B, Exhibit 1. The emissions projected for 2007, 2008, and 2009 are based on the 2005 Periodic Emissions Inventory and are discussed in Chapter Seven.

The point source category includes stationary sources which emit a significant amount of pollution into the air. Examples of point sources include power plants, industrial processes, and large manufacturing facilities. Area sources are stationary sources which are too small or too numerous to be treated as point sources. Examples include residential wood burning, commercial cooking, waste incineration, and wildfires. Nonroad mobile sources include off-highway vehicles and engines that move or are moved in a 12-month period such as construction and mining equipment, lawn and garden equipment, and aircraft. The onroad mobile sources category includes exhaust, paved road fugitive dust, unpaved road fugitive dust, tire wear, and break wear.

Biogenic sources were calculated and included in the 2005 inventory for particulate matter precursors. The biogenic emissions were estimated using the Model of Emissions of Gases and Aerosols from Nature (MEGAN) Biogenic Emissions Inventory System. In 2005, MAG contracted with ENVIRON International Corporation to develop a more reliable and accurate biogenic emission model and update the desert plant emission rates within Maricopa County. The MEGAN Model is a biogenic emissions model designed to generate hourly grided volatile organic compounds, NOx, and carbon monoxide emissions. The

TABLE 3-1

**EMISSIONS FOR THE PM-10 NONATTAINMENT AREA FROM ALL
SOURCE CATEGORIES INCLUDED IN THE 2005 PERIODIC
EMISSIONS INVENTORY FOR PM-10
(English Tons Per Year)**

	PM-10	PM-2.5	NOx	SOx	NH3
<u>POINT</u>					
Electricity Generation	113.97	113.72	1,154.60	15.24	132.55
Commercial/Institutional Fuel Combustion	4.90	4.88	58.20	2.82	2.53
Industrial Fuel Combustion	40.67	40.53	614.09	46.35	28.75
Food/Agriculture	27.83	7.87	---	---	---
Industrial Processes	670.39	420.49	116.20	123.40	12.41
Manufacturing Processes	9.17	8.95	15.00	0.02	0.16
Industrial Road Travel	697.98	283.10	---	---	---
Waste Disposal	69.62	59.45	27.55	56.53	---
Emission Reduction Credits	1.80	---	9.80	0.16	---
<u>TOTAL POINT SOURCES</u>	1,636.33	938.98	1,995.44	244.52	176.40
<u>AREA</u>					
Fuel Combustion	691.70	675.51	6,760.83	432.30	27.36
Industrial Processes	35,266.82	5,555.90	563.60	147.05	1,687.89
Waste Treatment/Disposal	110.74	76.90	19.70	6.14	1,321.01
Miscellaneous Area Sources	21,021.78	6,133.71	1,091.78	297.30	10,784.63
<u>TOTAL AREA SOURCES</u>	57,091.05	12,442.02	8,435.92	882.80	13,820.89
<u>NONROAD MOBILE</u>					
Agricultural	18.83	18.26	185.46	2.86	0.35
Airport Ground Support	16.50	15.70	467.82	14.71	---
Commercial	118.48	113.65	1,439.36	17.20	23.01
Construction & Mining	1,356.40	1,313.34	16,042.02	287.52	31.27
Industrial	109.23	106.25	3,292.98	26.44	78.64
Lawn & Garden	178.50	165.44	844.44	9.54	21.24

TABLE 3-1 (Continued)

**EMISSIONS FOR THE PM-10 NONATTAINMENT AREA FROM ALL
SOURCE CATEGORIES INCLUDED IN THE 2005 PERIODIC
EMISSIONS INVENTORY FOR PM-10
(English Tons Per Year)**

	PM-10	PM-2.5	NOx	SOx	NH3
Pleasure Craft	8.60	7.94	53.59	0.54	1.13
Railway Maintenance	1.20	1.17	9.29	0.14	0.02
Recreational Equipment	8.89	8.19	12.61	0.14	0.41
Aircraft	157.68	114.15	2,929.27	225.69	---
Locomotives	38.01	33.70	1,509.67	85.72	2.26
<u>TOTAL NONROAD MOBILE SOURCES</u>	2,012.32	1,897.78	26,786.52	670.50	158.33
<u>ONROAD MOBILE</u>					
Exhaust	1,041.00	960.00	63,093.00	1,536.00	2,870.00
Paved Road Fugitive Dust	13,783.00	189.00	---	---	---
Unpaved Road Fugitive Dust	8,490.00	849.00	---	---	---
Tire Wear	305.00	76.00	---	---	---
Brake Wear	394.00	167.00	---	---	---
<u>TOTAL ONROAD MOBILE SOURCES</u>	24,013.00	2,241.00	63,093.00	1,536.00	2,870.00
<u>TOTAL BIOGENIC SOURCES</u>	---	---	1,048.00	---	---
<u>TOTAL ALL SOURCES</u>	84,752.70	17,519.78	101,358.87	3,333.82	17,025.62

Notes: Totals shown may not equal the sum of individual values due to independent rounding.
1.00 ton = 0.91 metric tons

Source: 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area.
Maricopa County Air Quality Department, May 2007.

emission factors used in MEGAN were developed based on the results of a field study to identify prevalent plant species in Maricopa County, including their locations and biomass density. Among the chemical species included in the MEGAN Model, only NO_x is attributable to particulate matter formation and therefore only NO_x emissions are included in the 2005 inventory.

Figure 3-1 shows the 2005 PM-10 annual emissions in the PM-10 nonattainment area. As shown in the figure, construction (residential, commercial, road, and other land clearing) accounted for 39 percent of the total 2005 annual PM-10 emissions. Paved roads (including trackout) and unpaved roads contributed 16 percent and 10 percent, respectively, to the total emissions. Windblown dust accounted for 8 percent of the total 2005 PM-10 annual emissions. Within this category, windblown vacant was the largest contributor, responsible for 7 percent of the total emissions. The fuel combustion and fires category (industrial natural gas and fuel oil, commercial/institutional natural gas and fuel oil, and residential natural gas, wood and fuel oil) was also responsible for 7 percent of the total 2005 annual PM-10 emissions.

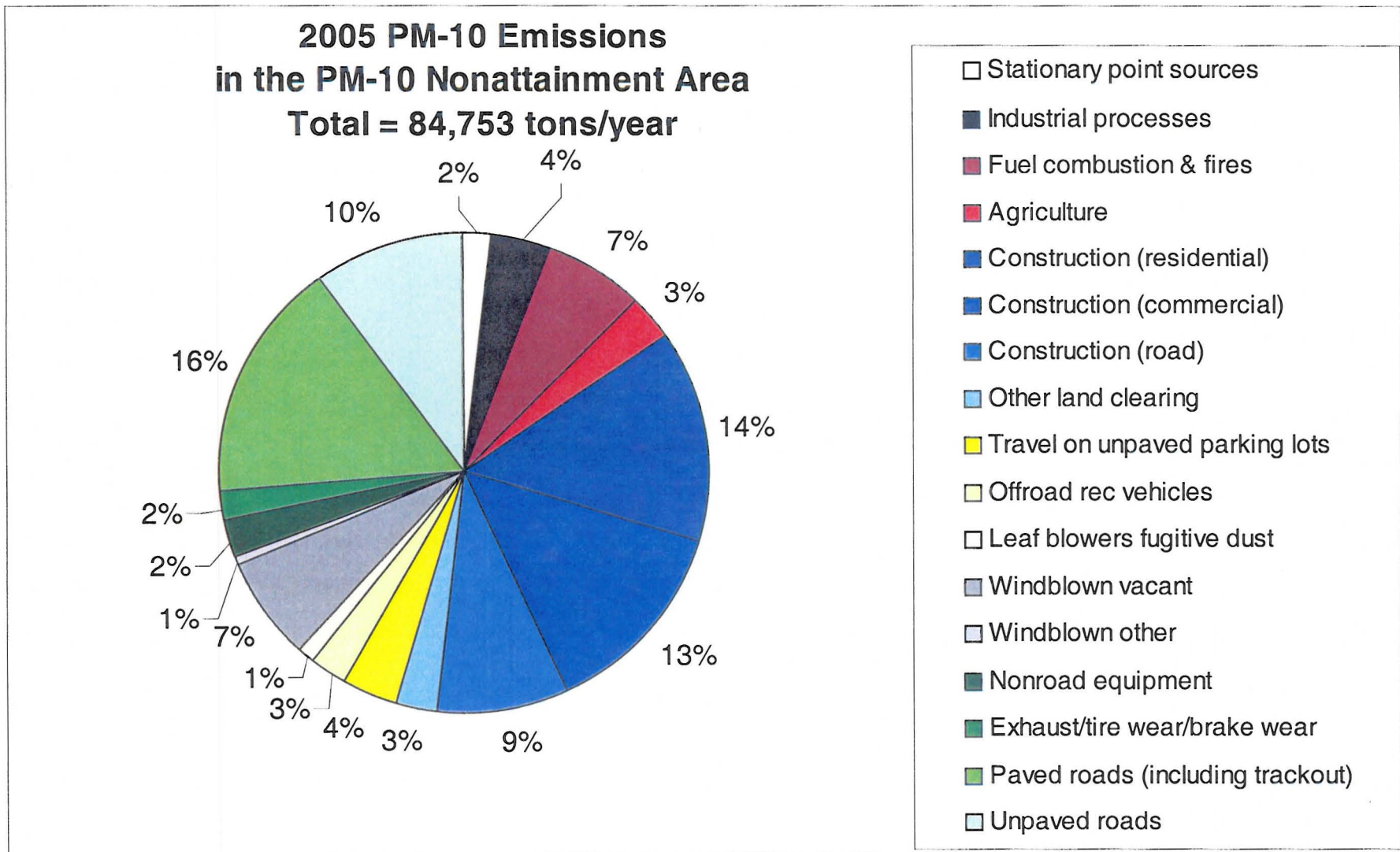
AIR QUALITY MONITORING DATA AND TREND ANALYSIS

In addition to identifying sources of PM-10 emissions, it is important to examine the impact of these emissions on the ambient concentrations. This section includes discussions of the National Ambient Air Quality Standards (NAAQS) and the air quality data recorded by the areawide monitoring network.

The 24-hour PM-10 standard is 150 micrograms per cubic meter (ug/m³). The standard is attained when the expected number of exceedances per year at each monitoring site is less than or equal to one. The number of expected exceedances at a site is determined by recording the number of exceedances in each calendar year and then averaging them over the past three years. At some sites, PM-10 sampling is scheduled less frequently than every day. To account for this, an adjustment must be made to the data collected at each site to estimate the number of exceedances in a calendar year. Due to possible seasonal imbalance, the adjustment is made quarterly. The estimate of the expected number of exceedances for the quarter is equal to the observed number of exceedances plus an increment associated with the missing data. The expected number of exceedances is then estimated by averaging the annual estimates over the three-year period. Due to the rounding criteria used by EPA, a recorded average PM-10 concentration must be under 155 ug/m³ to not be considered an exceedance and the three-year expected exceedance rate for any site must be less than 1.05 for the region to be in attainment of the 24-hour standard. The annual PM-10 standard of 50 ug/m³ was revoked by EPA effective December 18, 2006.

In order to determine the extent of the regional PM-10 pollution problem, it is necessary to examine the air quality data collected by the areawide monitoring network. A total of 26 criteria pollutant monitoring stations are currently operated by the Maricopa County Air Quality Department (MCAQD), Pinal County Air Quality Control District (PCAQCD), and Arizona Department of Environmental Quality (ADEQ) in the PM-10 nonattainment area. Seventeen of these sites monitor PM-10, including the new Coyote Lakes site which began

FIGURE 3-1



Source: 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area. Maricopa County Air Quality Department, May 2007.

operating in April 2007. The Buckeye monitoring site is located just outside the western boundary of the nonattainment area and also monitors PM-10. Site-specific information regarding the PM-10 monitoring stations is provided in Table 3-2, and the geographic location of each site is indicated in Figure 3-2.

As mentioned previously, PM-10 samples at some of the monitor sites are not collected every day. Most of the exceedances before 2004 were recorded by filter-based monitors that measure PM-10 concentrations every sixth day. Since 2004, the MCAQD filter-based monitors that have exceeded the PM-10 standard have been replaced with monitors that measure PM-10 concentrations continuously. Currently, within the nonattainment area samples are collected every sixth day at nine of the PM-10 monitoring stations while nine sites sample continuously. The JLG Supersite station collects samples every sixth day as well as continuously. The sampling schedule for each site is provided in Table 3-2.

One method of assessing the overall air quality of a region is to examine the concentrations measures at the monitoring stations. The trend in the number of 24-Hour PM-10 exceedance days is presented in Figure 3-3. Table 3-3 provides detailed information for the past five years for the 24-hour standard.

It is important to note that beginning in 2004, the Arizona Department of Environmental Quality began flagging natural and exceptional events. This is an uncontrollable event caused by natural sources of pollution or an event that is not expected to recur at a given location. The data and a demonstration of the event is submitted to EPA for concurrence. Once approved, the data is not used in determining compliance with the PM-10 standard. Exceedances in 2004 and 2006 have been approved or are pending approval by EPA as natural or exceptional events and are noted in Table 3-3. These data have been removed from Figure 3-3.

Figure 3-3, which presents the trend in number of exceedance days of the 24-hour standard from 1988 to 2006, shows a noticeable increase in the number of exceedance days since 1994. Between 1988 and 1993, there were zero to three exceedance days per year. The number of exceedance days increased from zero in 1993 to 10 in 1994. This increase in 1994 is attributable to the installation of a new site (Salt River monitor). This site was located in the Salt River Area and sources nearby included sand and gravel, metal recycling, precast manufacturing, and paved and unpaved haul road. The Salt River site was shut down as of December 31, 2002. Efforts were made to find a suitable replacement site with comparable PM-10 concentrations and industrial emissions. The West Forty Third Avenue site was identified and began operating in the Salt River Area in the second quarter of 2002.

There was also an increase in the number of exceedance days from November 2005 through March 2006. During this period, the region experienced stagnant conditions and an unusually long period with no rain, which may have attributed to the exceedances. As a result of the exceedances recorded in 2005 and 2006, the nonattainment area was unable to attain the PM-10 standard by the December 31, 2006 deadline.

TABLE 3-2**PM-10 MONITORING STATIONS**

FIGURE 3-2 MAP INDEX	SITE	ADDRESS	OPERATING AGENCY	SAMPLING SCHEDULE
AJ	Apache Junction Fire Station	3955 E. Superstition Blvd.	PCAQCD	1 in 6 day
BE*	Buckeye	26449 W. 100 th Dr.	MCAQD	Continuous
BN	Bethune Elementary School	1310 S. 15 th Ave.	ADEQ	1 in 6 day
CL	Coyote Lakes	115 th Ave. & Union Hills	MCAQD	Continuous
CP	Central Phoenix	1645 E. Roosevelt	MCAQD	Continuous
DC	Durango Complex	2702 RC Esterbrooks Blvd.	MCAQD	Continuous
DY	Dysart	16825 N. Dysart	MCAQD/ADEQ	1 in 6 day
GL	Glendale	6001 W. Olive	MCAQD	1 in 6 day
GR	Greenwood	1128 N. 27 th Ave.	MCAQD	Continuous
HI	Higley	15400 S. Higley Rd.	MCAQD	Continuous
ME	Mesa	310 S. Brooks	MCAQD	1 in 6 day
NP	North Phoenix	601 E. Butler	MCAQD	1 in 6 day
SP	South Phoenix	33 W. Tamarisk	MCAQD	Continuous
SS	South Scottsdale	2857 N. Miller Rd.	MCAQD	1 in 6 day
SUPR	JLG Supersite	4530 N. 17 th Ave.	ADEQ	1 in 6 day & Continuous
WC	West Chandler	275 S. Ellis	MCAQD	1 in 6 day
WF	West 43 rd Avenue	3940 W. Broadway	MCAQD	Continuous
WP	West Phoenix	3847 W. Earll	MCAQD	Continuous

* The Buckeye monitor is located outside the western boundary of the PM-10 nonattainment area.

Sources: ADEQ Air Quality Annual Report 2006; Maricopa County 2006 Air Monitoring Network Review; Maricopa County.

Figure 3-2

PM-10 NONATTAINMENT AREA AND PM-10 MONITORING SITES

Monitoring Site	Name
AJ	Apache Junction
BE	Buckeye
BN	Bethune School
CL	Coyote Lakes
CP	Central Phoenix
DC	Durango Complex
DY	Dysart
GL	Glendale
GR	Greenwood
HI	Higley
ME	Mesa
NP	North Phoenix
SP	South Phoenix
SS	South Scottsdale
SUPR	JLG Supersite
WC	West Chandler
WF	West 43rd Ave
WP	West Phoenix

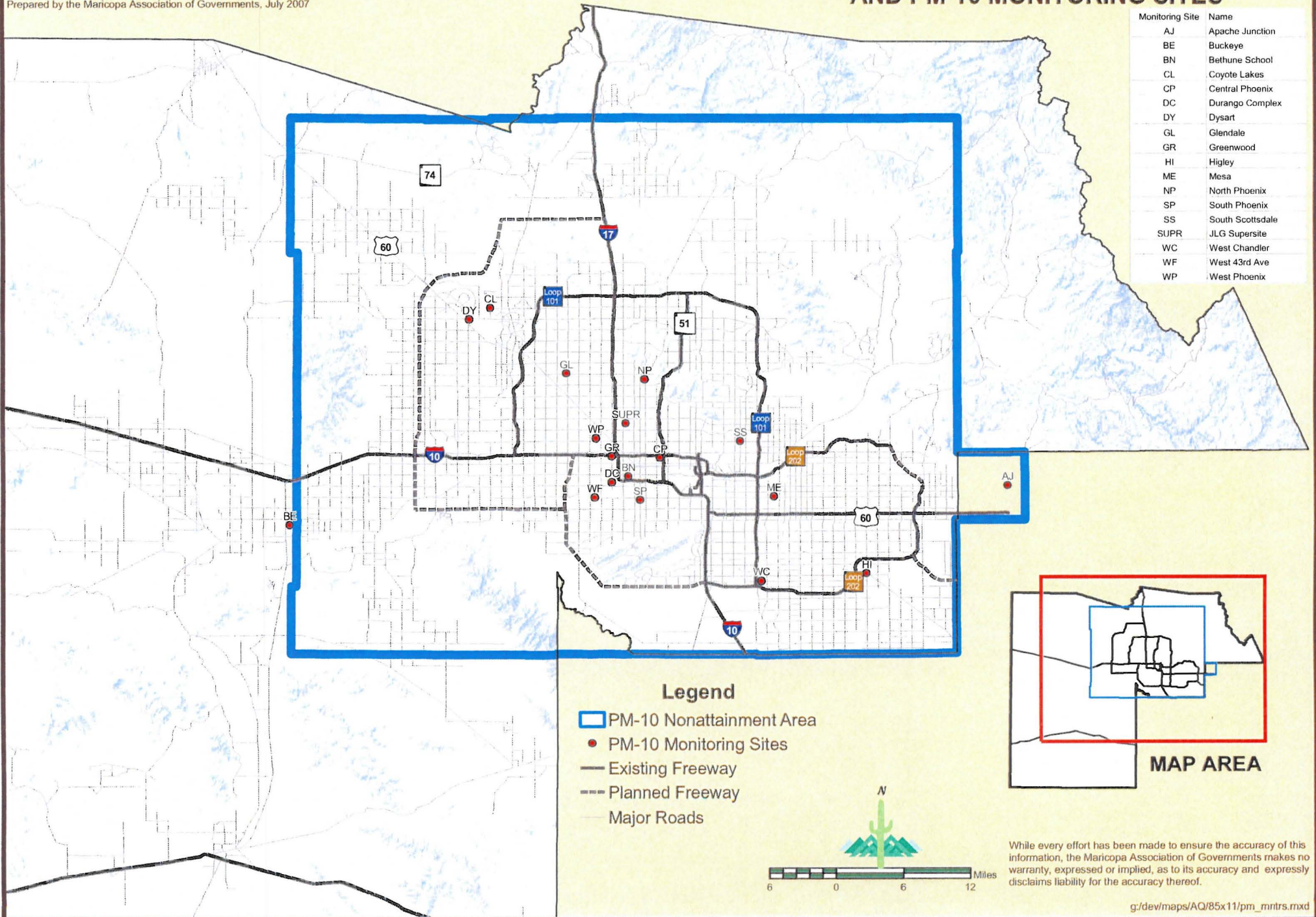
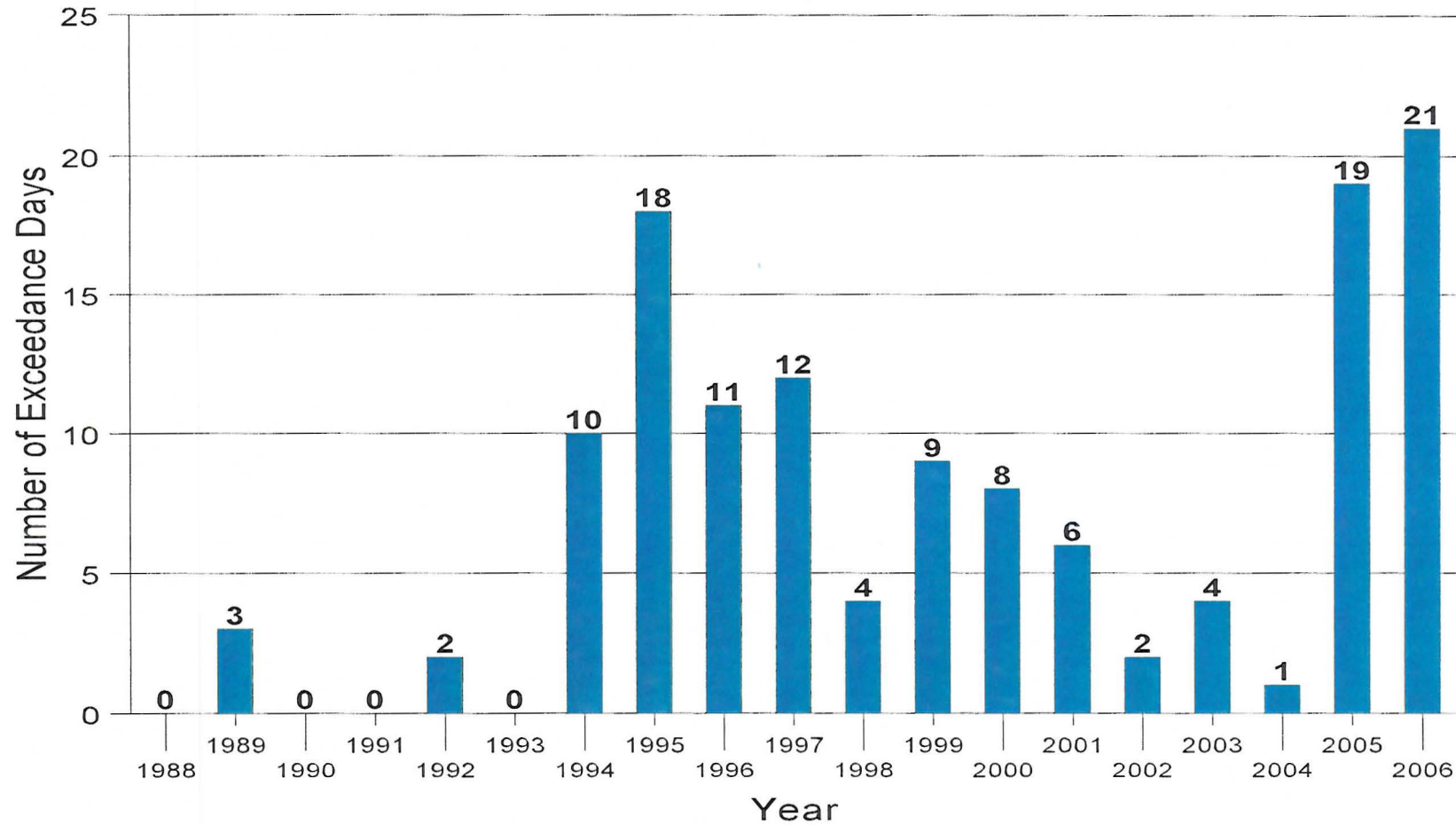


FIGURE 3-3

NUMBER OF 24-HOUR PM-10 EXCEEDANCE DAYS



Note: The Arizona Department of Environmental Quality began flagging natural and exceptional events in 2004. Exceedances that have been approved or are pending approval by EPA as natural or exceptional events have been removed from this chart.

Sources: 1988 - 1997 - Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area, February 2000.
1998 - 2006 - EPA Air Quality System; Maricopa County Network Reviews; ADEQ Air Quality Reports.

TABLE 3-3
EXCEEDANCES OF THE 24-HOUR PM-10 STANDARD, 2002 TO 2006

2002				2003				2004				2005				2006			
DATE	DAY	READING	LOCATION	DATE	DAY	READING	LOCATION	DATE	DAY	READING	LOCATION	DATE	DAY	READING	LOCATION	DATE	DAY	READING	LOCATION
1/8/02	Tue	158	DC	7/14/03	Mon	240	CH	8/13/04	Fri	209‡	DC	4/4/05	Mon	172	WF	1/10/06	Tue	155	DC
1/8/02	Tue	174	SA	7/14/03	Mon	175	CP	8/13/04	Fri	493‡	HI	6/21/05	Tue	158	BE*	1/10/06	Tue	190	WF
4/26/02	Fri	232	DC	7/14/03	Mon	195	DC	8/13/04	Fri	251‡	WF	11/1/05	Tue	166	WF	1/11/06	Wed	169	DC
4/26/02	Fri	249	SA	7/14/03	Mon	166	GR	9/18/04	Sat	289‡	BE*	11/2/05	Wed	174	WF	1/11/06	Wed	165	WF
4/26/02	Fri	172	WF	7/14/03	Mon	225	HI	10/9/04	Sat	159	HI	11/3/05	Thu	163	DC	1/12/06	Thu	170	DC
				7/14/03	Mon	176	ME					11/10/05	Thu	166	WF	1/12/06	Thu	169	WF
				7/14/03	Mon	155	NP					11/17/05	Thu	156	DC	1/12/06	Fri	157	WF
				7/14/03	Mon	158	PALV*					11/18/05	Fri	169	BE*	1/19/06	Thu	183	DC
				7/14/03	Mon	164	SP					11/22/05	Tue	189	DC	1/19/06	Thu	184	WF
				7/14/03	Mon	172	SS					11/22/05	Tue	173	WF	1/24/06	Tue	170	HI
				7/14/03	Mon	169	SUPR					11/23/05	Wed	165	DC	2/8/06	Wed	183	WF
				7/14/03	Mon	206	WC					11/23/05	Wed	175	WF	2/9/06	Thu	171	DC
				7/14/03	Mon	157	WF					12/1/05	Thu	158	DC	2/9/06	Thu	204	WF
				7/14/03	Mon	158	WP					12/2/05	Fri	165	DC	2/13/06	Mon	159	BE*
				7/15/03	Tue	155	CP					12/2/05	Fri	195	WF	2/14/06	Tue	272	BE*
				7/16/03	Wed	183	CP					12/12/05	Mon	198	BN	2/15/06	Wed	157	DC
				8/13/03	Wed	197	WC					12/12/05	Mon	173	GR	2/15/06	Wed	202	WF
												12/12/05	Mon	206	DC	2/17/06	Fri	192	BE*
												12/12/05	Mon	233	WF	3/10/06	Fri	240‡	DC
												12/12/05	Mon	155	WP	3/10/06	Fri	166‡	GR
												12/13/05	Tue	166	DC	3/10/06	Fri	260‡	WF
												12/13/05	Tue	167	WF	4/14/06	Fri	212‡	BE*
												12/14/05	Wed	181	DC	4/14/06	Fri	190‡	CP
												12/14/05	Wed	177	WF	4/14/06	Fri	253‡	DC
												12/15/05	Thu	156	DC	4/14/06	Fri	212‡	GR
												12/21/05	Wed	200	DC	4/14/06	Fri	222‡	HI
												12/21/05	Wed	200	WF	4/14/06	Fri	313‡	WF
												12/22/05	Thu	179	DC	4/14/06	Fri	178‡	WP
												12/22/05	Thu	168	WF	4/15/06	Sat	187‡	CP
												12/23/05	Fri	157	DC	4/15/06	Sat	179‡	DC
												12/23/05	Fri	156	WF	4/15/06	Sat	170‡	GR
																4/15/06	Sat	274‡	HI
																4/15/06	Sat	192‡	WF
																5/22/06	Mon	174‡	WF
																6/2/06	Fri	160	WF
																6/6/06	Tue	156‡	HI
																10/5/06	Fri	166‡	HI
																11/16/06	Thu	164	WF
																11/17/06	Fri	175	WF
																11/27/06	Mon	164	WF
																12/5/06	Tue	173	WF
																12/6/06	Wed	167	DC
																12/6/06	Wed	160	WF
																12/7/06	Thu	174	DC
																12/7/06	Thu	160	WF
																12/14/06	Thu	163	WF
																12/15/06	Thu	177	WF

* Monitor located outside the PM-10 nonattainment area.

‡ This value has been entered as an exceptional event. EPA concurrence with the exceptional event has either occurred or is pending.

Sources: EPA Air Quality System; Maricopa County Network Reviews; ADEQ Air Quality Reports.

Table 3-3 lists the date, day, reading, and location of each exceedance of the 24-hour PM-10 standard recorded from 2002 to 2006, including the data flagged as natural or exceptional events. In 2004, data from two exceedance days were classified as natural or exceptional events. Therefore, of the five exceedances that occurred in 2004, only the October 9, 2004 exceedance at the Higley monitor is used to determine compliance with the PM-10 standard. In 2006, data from six exceedance days were flagged due to natural or exceptional events. After removing these events from 2006, there were 21 days where at least one monitor exceeded the standard and a total of 29 exceedances. The Buckeye monitor, located just outside the PM-10 nonattainment area, accounts for three of these exceedances and three of the exceedance days.

In 2005 and 2006, most of the exceedances occurred at the Durango Complex and West Forty Third Avenue monitors, located in the Salt River Area. For 2005, 26 of the 31 exceedances occurred at these sites (13 exceedances at each monitor). In 2006, the Durango Complex and West Forty Third Avenue monitors had eight and 17 exceedances, respectively, accounting for 25 of the 29 exceedances.

In summary, exceedances recorded in 2005 and 2006 resulted in the region missing the PM-10 attainment deadline of December 31, 2006. Most of the exceedances have occurred at the Durango Complex and West Forty Third Avenue sites, located in the Salt River Area.

CHAPTER FOUR

EVALUATION OF PM-10 PARTICULATE MATTER CONTROL STRATEGIES

In preparation for the identification of Suggested Measures for the MAG 2007 Five Percent Plan for PM-10, the Maricopa Association of Governments conducted a thorough evaluation of various control measures. The measures evaluated were new measures above and beyond the measures in the prior PM-10 Plans. A variety of information was developed and assembled for use in conducting the evaluation. The information included the: initial preparation of a Preliminary Draft Comprehensive List of Measures for evaluation; a report on the Analysis of Particulate Control Measure Cost Effectiveness; Preliminary Results of the PM-10 Source Attribution and Deposition Study; an estimation of the air quality impacts for reducing PM-10 emissions, modeling attainment, and attaining the PM-10 standard at all monitors in the nonattainment area; and identification of potential implementing entities. Throughout the process, the Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter was refined as information became available. A description of the information used to evaluate the control measures is provided in this Chapter.

MAG ANALYSIS OF PARTICULATE CONTROL MEASURE COST EFFECTIVENESS

To initiate the process, the staff from the parties to the Air Quality Memorandum of Agreement compiled a Preliminary Draft Comprehensive List of Measures for evaluation. The parties to the Air Quality Memorandum of Agreement include the: Arizona Department of Environmental Quality, Arizona Department of Transportation, Maricopa County Air Quality Department, and Maricopa Association of Governments. A study was then commissioned by MAG to prepare descriptions of the measures. Sierra Research was the MAG consultant for the analysis.

The final report on the Analysis of Particulate Control Measure Cost Effectiveness was published on April 18, 2007 (see Appendix B, Exhibit 2). Collectively, the analysis provided an evaluation of forty-six control measures. For each measure, the following information was prepared:

- Narrative description;
- Suggested implementing entity;
- An estimate of the cost of implementation;
- An estimate of the PM-10 emission reduction potential;
- An estimate of the cost effectiveness (\$/ton of PM-10 reduced); and
- A discussion of implementation issues and comments.

In preparing the information for the analysis, measures from other PM-10 Serious Areas were reviewed and contacts were established. Relevant dust control literature reviews were performed to obtain data on measured emission reductions. Contacts were established with local agencies and businesses in Maricopa County to determine the cost

of labor, equipment, materials, etc. The Draft 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County Nonattainment Area was reviewed to ensure that emission estimates of control measure benefits were computed in a manner that was consistent with methods used to estimate source specific emissions. Detailed spreadsheets were prepared to document the sources of information, assumptions and methods used to prepare estimates of emission benefits, costs and cost effectiveness for each control measure.

The Analysis of Particulate Control Measure Cost Effectiveness report provides a summary of the cost effectiveness estimates prepared for each of the control measures. The measures were ranked on the basis of their cost effectiveness from the lowest to the highest. Due to uncertainty in available estimates or alternate options for control, a range of cost effectiveness was computed for several control measures. For these measures, the midpoint in the range of cost effectiveness estimates was used to establish their ranking. Insufficient information was available to quantify the costs and benefits of several control measures and these were listed as unknown. The notes on the degree of confidence in the estimate (L for Low, M for Medium and H for High) and the emission source category that would be impacted by the measure are contained in the report. The descriptions of the measures are included later in this Chapter and in the full report in Appendix B, Exhibit 2.

MAG PM-10 SOURCE ATTRIBUTION AND DEPOSITION STUDY

The MAG PM-10 Source Attribution and Deposition Study was another major study which provided information for the evaluation of control measures. The study was designed to identify the sources of emissions contributing to violations of the PM-10 standard at monitors in the nonattainment area during stagnant conditions and characterize the deposition of PM-10 particles emitted by these sources. The MAG consultants for the study were T&B Systems and Sierra Research. The key questions addressed in the study were:

- Where are the specific source areas and/or sources in the Salt River region that contribute to the particulate matter (PM) loading at the Durango Complex and West 43rd monitoring sites?
- To obtain useful results from models such as AERMOD, can the regional particle size distribution be characterized on an area basis (i.e., is there an area of uniformity that can be generalized?)
- What are the causes of heavy PM loading during the morning hours at the Durango and West 43rd monitors? Are the diurnal variations of PM-10 and peaks due to reentrainment of paved road dust, or due to other activities in the surrounding areas that are coincident with traffic peaks?

The approach used for the study involved assessing existing meteorological and PM data; selecting monitoring tools; establishing a sampling plan; defining routes for mobile

sampling; determining locations of meteorological data collection; selecting locations to investigate dispersion of roadway sources; conducting sampling in two phases; coordinating with local agencies for related data; and performing daily review of collected data to identify insights, opportunities and problems. The monitoring tools for the study included: a particle lidar; mobile monitoring; DustTrak optical PM-10 monitors; DustTrak optical PM-2.5 monitors; an aerodynamic particle size analyzer; MiniVol filter based samplers; a sodar; and a SCAMPER vehicle. The SCAMPER (System for Continuous Aerosol Monitoring of Particulate Emissions from Roadways) vehicle was used to measure PM-10 from paved roads. From November 15, 2006 through December 14, 2006, extensive measurements were taken in the Salt River area using state-of-the-art technologies.

In general, the study identified a number of sources of PM-10 in the Salt River area. They included: trackout; dragout from unpaved or poorly maintained paved roads or parking lots; unpaved shoulders; unpaved roads; open burning; agriculture; and vehicle activity on unpaved parking areas and vacant lots. Preliminary results from the study were used in the evaluation of control measures and the final results were used in the modeling attainment demonstration.

PRELIMINARY DRAFT COMPREHENSIVE LIST OF MEASURES TO REDUCE PM-10 PARTICULATE MATTER

On December 7, 2006, the Preliminary 2005 PM-10 Emissions Inventory for the PM-10 Nonattainment Area, Preliminary Projected 2007, 2008 and 2009 Emissions Inventories, and the initial Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter were presented to the MAG Air Quality Technical Advisory Committee for review and comment. During January and February 2007, the Air Quality Technical Advisory Committee reviewed the information from the Analysis of Particulate Control Measures report and PM-10 Source Attribution and Deposition Study. On February 16, 2007, a workshop was conducted on the two studies to afford an opportunity to discuss the preliminary measure analysis and study with the MAG consultants. The Committee also reviewed information on the estimated air quality impacts of the measures for reducing PM-10 emissions, modeling attainment, and attaining the standard at all of the monitors.

During this time period, the Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter was refined based upon the information generated and comments received (see Table 4-1). The draft list of measures were also ranked by increasing cost effectiveness and by decreasing impact on the five percent reduction target (see Table 4-2 and Table 4-3).

As will be described in Chapter Five, further additions and modifications to the Preliminary Draft Comprehensive List were made by the MAG Air Quality Technical Advisory Committee during the process to recommend a Suggested List of Measures for consideration by the implementing entities. Subsequently, the MAG Regional Council took action on March 28, 2007 and May 23, 2007 to approve a Suggested List of Measures to Reduce PM-10 Particulate Matter for consideration by the implementing entities. In

**TABLE 4-1 PRELIMINARY DRAFT COMPREHENSIVE LIST OF MEASURES
TO REDUCE PM-10 PARTICULATE MATTER**

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENT-ING ENTITY
Agriculture The Governor's Agricultural Best Management Practices Committee is in the process of evaluating potential measures to further reduce PM-10 emissions from agriculture for consideration for the Five Percent Plan for PM-10. This Committee was established by law in 1998 (Arizona Revised Statutes, Title 49-457) to develop an agricultural PM-10 general permit that would address the need for controls on agricultural operations. The potential agricultural measures will be presented to the MAG Air Quality Technical Advisory Committee for consideration.					
Fugitive Dust Control Rules					
1. Public education and outreach (e.g., Clark County) with assistance from local governments - This measure would involve publicity campaigns (e.g., Bring Back Blue) that increase public awareness of the PM-10 problem and discourage citizens from participating in activities that generate airborne dust.	\$7,898/ton (VMT reduction of 0.5% in the nonattainment area)	131 tons/yr (2.9% of target)	Negligible impact on the sources of PM-10 emissions near the monitors on the worst days in 2005/2006	Minor impact ,if the public routinely complains about visible dust from sources located near a PM-10	County, local govts
2. Extensive Dust Control Training Program (e.g., Clark County) - This measure would involve conducting more frequent dust control training classes and implementing a formal certification program. The County would provide advanced training to representatives of trade associations to qualify them to conduct classes and issue certifications.	\$12,494/ton (additional water truck full-time on site)	313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, when an increased compliance rate is applied to construction sources that contributed to the exceedance at the Higley monitor on 1/24/06	Moderate impact, if training reduces dust generation by construction sources near PM-10 monitors	County, private sector

Source: Maricopa Association of Governments. February 2007.

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENT-ING ENTITY
3. Core Dust Control Training Program with video provided to local governments and private sector - This measure involves developing visual and written materials that would be used by the public agencies and private companies to train their employees on the dust control rules and effective dust reduction practices.	\$9,990/ton (additional water truck ½ time on site)	313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, when an increased compliance rate is applied to construction sources that contributed to the exceedance at the Higley monitor on 1/24/06	Moderate impact, if training reduces dust generation by construction sources near PM-10 monitors	County, local govts, private sector
4. Dust Managers required at construction sites of 50 acres and greater (e.g., Clark County) - This measure would require a dust manager to be present on construction sites where 50 or more acres of soil are disturbed.	\$14,285/ton (additional water truck full time on site)	313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, when an increased compliance rate is applied to construction sources that contributed to the exceedance at the Higley monitor on 1/24/06	Large impact, if the manager minimizes dust generation on construction sites near a PM-10 monitor and ensures that all disturbed soil is stabilized during high winds (>15 mph).	County

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENTING ENTITY
5. Dedicated enforcement coordinator for unpaved roads, unpaved parking, and vacant lots (e.g., Clark County) - This measure would require that additional resources be dedicated to strengthen enforcement of Rule 310.01 for unpaved roads, unpaved parking lots, and vacant disturbed lots.	\$534/ton (application of dust palliatives on all 224.3 miles of high traffic unpaved roads)	45 tons/yr (1.0% of target) for every 1% increase in Rule 310.01 compliance for unpaved roads and parking lots	Moderate impact, when an increased compliance rate is applied to the unpaved roads and parking areas that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06; small impact due to higher compliance rate for vacant lots that contributed to an exceedance at the Higley monitor on 1/24/06	Large impact, if the increased enforcement of Rule 310.01 reduces dust generation from unpaved roads and parking lots near a PM-10 monitor and ensures that disturbed soil on vacant lots is stabilized during high winds (>15 mph)	County
6. Strengthen the stringency and enforcement of the trackout provisions - This measure would strengthen the existing trackout provisions (e.g., reduce the 50' length that requires rapid cleanup), include new provisions for dragout (e.g., no visible dust past the property line), and increase the frequency of inspections and notices of violation issued for visible trackout and dragout.	\$2,499,750/ton (increased sweeping of unpaved access points by industry)	40 tons/yr (0.9% of target) for every 1% increase in Rule compliance for trackout or dragout	Large impact, when an increased compliance rate is applied to the trackout and dragout that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06.	Large impact, if the increased compliance reduces trackout on roads near a PM-10 monitor	County
7. Increase fines for dust control violations and continue to publish the list of violators - This measure would change ARS 49-463 and 49-513 to increase the current ceiling of \$10,000 per day per violation of the County's PM-10 rules and publicize the names of violators and the dollar penalty assessed.	Unknown (elasticity of response to increased fines is not available)	Negligible impact	Negligible impact	Negligible impact	State, County

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8. Establish a certification program for Dust Free Developments to serve as an industry standard - This measure would create a program to certify and publicize companies that routinely demonstrate exceptional efforts to reduce airborne dust.	\$10,752/ton (80% emission reduction for participating companies)	313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, when an increased compliance rate is applied to construction sources that contributed to the exceedance at the Higley monitor on 1/24/06	Minor impact, if certification results in dust reductions by sources near PM-10 monitors	State, County
9. Better defined tarping requirements in Rule 310 to include enclosure of the bed - This measure would modify Rule 310 to require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.	\$14,963/ton (reduction per covered truck, assuming 13 trips/day)	313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, when an increased compliance rate is applied to construction sources that contributed to the exceedance at the Higley monitor on 1/24/06	Minor impact, if better tarping reduces dust near PM-10 monitors	County
10. Conduct just-in-time grading (i.e., once a parcel of land is cleared, stabilization or work on the parcel would be required within a certain number of days) - This measure would require that disturbed areas (e.g., 10 acres or more) on construction sites would have to be stabilized within a short time (e.g., one week) after grading occurred.	Unknown (minimize emissions under high wind conditions)	Negligible impact; already covered by Rule 310	Negligible impact	Negligible impact	County

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11. Establish self-monitoring requirements for permitted sources larger than 50 acres - This measure would require large permitted sources to conduct continuous monitoring to measure meteorological and PM-10 concentrations to determine when dust generation on-site needs to be reduced.	\$21,530/ton (additional water truck full-time on site)	18 tons/yr (0.4% of target) for every 1% increase in Rule 316 effectiveness; 313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, if permitted sources near the Salt River Area monitors take action to reduce dust generation and increase remediation activities (e.g., street sweeping) when PM-10 concentrations at their onsite monitor(s) exceed some threshold value,	Large impact, if monitored PM-10 values trigger reductions in emissions near a PM-10 monitor	County
12. Conduct mobile monitoring to measure PM-10 and issue NOVs - This measure involves deployment of a vehicle that has been instrumented to monitor PM-10 and meteorological conditions, so that sources can be identified, and immediate remediation and/or enforcement actions taken.	\$54,233/ton (use of a gravel bed to control emissions from vehicles traveling on an unpaved surface)	94 tons/yr (2.0% of target) per 1% increase in compliance with dust control rules by nonpermitted sources	Large impact, when the increased compliance rate is applied to the nonpermitted sources that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06.	Large impact, if the vehicle is used to identify sources and immediately reduce visible dust near PM-10 monitors	County

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13. Cease dust generation activities during stagnant conditions - This measure would require that dust generation activities be curtailed on days between November 1 and February 15 when ADEQ issues a High Pollution Advisory (HPA) due to stagnant weather conditions.	Unknown (During the last 3 years, there have been an average of 8 HPA days, 9 stagnation days, and 10 PM-10 exceedance days between Nov 1 and Feb 15 of each year)	Negligible impact on annual PM-10 emission reductions due to the limited number of days involved	This measure would contribute to modeling attainment at the Salt River Area monitors on 12/12/05 and 12/13/05, but only if curtailment of activities occurred during High Pollution Watches, as well as HPAs. Adding high wind HPA days to the measure would also assist in modeling attainment at the Salt River Area monitors on 2/15/06. If High Pollution Watches on windy days were added, this measure would also be useful in modeling attainment at the Higley monitor on 1/24/06.	Moderate impact, if sources near monitors cease dust generation activities on HPA days under stagnant conditions. Impact is diluted by the fact that HPAs do not always coincide with PM-10 exceedance days.; also this measure does not address cessation of activities on high wind HPA days.	County
14. Establish maintenance requirements for paved roads and parking lots - This measure would modify Rule 310.01 to require that public and private paved roads and parking lots be maintained to minimize visible dust (e.g., the silt loading level on the paved surfaces should not exceed a specified threshold).	\$320,444/ton (Sweep a parking lot once every two weeks)	40 tons/yr (0.9% of target) for every 1% increase in Rule compliance for trackout and dragout	Large impact, when an increased compliance rate is applied to the trackout and dragout that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06.	Large impact, if the increased maintenance of paved roads and parking lots reduces trackout and dragout near a PM-10 monitor.	County

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15. Conduct nighttime inspections - This measure would involve proactive inspections of nonpermitted and permitted PM-10 sources during non-daylight hours.	\$10,752/ton (2 additional water trucks and drivers per facility)	94 tons/yr (2.0% of target) per 1% increase in compliance with dust control rules by nonpermitted sources; 18 tons/yr (0.4% of target) for every 1% increase in Rule 316 effectiveness; 313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Large impact, when the increased compliance rates are applied to the sources that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06.	Large impact, if the pre-dawn inspections identify sources and initiate actions to immediately reduce visible dust near PM-10 monitors	County
16. Increase inspection frequency for permitted facilities - This measure would increase the number of proactive inspections conducted at permitted facilities.	\$65,765/ton (increase watering to achieve 80% rule compliance)	18 tons/yr (0.4% of target) for every 1% increase in Rule 316 effectiveness	Moderate impact, when the increased compliance rate is applied to Rule 316 sources near the Salt River Area monitors on 12/12/05 and 2/15/06.	Moderate impact, if increased inspections result in reductions in PM-10 emissions near a monitor	County

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17. Increase number of proactive inspections in areas of highest PM-10 emissions densities - intensify training and education - incentive program for compliance - This measure would focus on the areas of highest PM-10 emissions density: by increasing the number of inspectors and proactive inspections, conducting on-site training, offering incentives to reduce PM-10, and performing community outreach.	\$65,900/ton (facilities are inspected twice per day; compliance response: increase haul road watering from once every two hours to once per hour)	18 tons/yr (0.4% of target) for every 1% increase in Rule 316 effectiveness	Moderate impact, when the increased compliance rate is applied to Rule 316 sources near the Salt River Area monitors on 12/12/05 and 2/15/06.	Moderate impact, if increased inspections result in reductions in PM-10 emissions near a monitor	County
18. Notify violators more rapidly to promote immediate compliance - This measure would require inspectors that observe visible dust (e.g., opacity or trackout levels that are approaching rule limits) to call the permit holder and make reasonable efforts to inform a person on-site, so that measures can be taken to prevent, reduce, or mitigate dust generation before a violation occurs.	\$6,100/ton (for unpaved parking); \$239,050/ton (for vacant lots)	313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance; 18 tons/yr (0.4% of target) for every 1% increase in Rule 316 effectiveness	Large impact, when increased compliance rates are applied to sources that contributed to the exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06 and the exceedance at the Higley monitor on 1/24/06.	Moderate impact, if the inspector's early notification efforts result in immediate dust reductions by sources near PM-10 monitors	County
Industry					
19 Fully implement Rule 316 - This measure would enforce the provisions of Rule 316, adopted by Maricopa County in June 2005, for nonmetallic mineral processing of PM-10.	\$4,802/ton (minimum for a large facility); \$59,750/ton (maximum for a small facility)	18 tons/yr (0.4% of target) for every 1% increase in Rule 316 effectiveness	Moderate impact, when the increased compliance rate is applied to Rule 316 sources near the Salt River Area monitors on 12/12/05 and 2/15/06 .	Moderate impact, if new provisions of rule 316 result in reductions in PM-10 emissions near a monitor	County, private sector

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20. Require private companies to use PM-10 certified street sweepers on paved areas including parking lots (e.g., Clark County) - This measure will require paved surfaces (e.g., parking lots) owned by private companies to be swept using PM-10 certified street sweepers.	\$356,350/ton (Sweep a parking lot once every two weeks)	40 tons/yr (0.9% of target) for every 1% increase in Rule compliance for trackout and dragout	Large impact, when an increased compliance rate is applied to the trackout and dragout that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06.	Large impact, if the increased maintenance of paved roads and parking lots reduces trackout and dragout near a PM-10 monitor.	State
21. Shift hours of operation during stagnant conditions in November through February - This measure would require that industry delay dust generation activities until 9 a.m. on days between November 1 and February 15 when ADEQ issues a High Pollution Advisory (HPA) under stagnant conditions.	Unknown (During the last 3 years, there have been an average of 8 HPA days, 9 stagnation days, and 10 PM-10 exceedance days between Nov 1 and Feb 15 of each year)	No impact; emissions are deferred, but not reduced	This measure would have a large impact on modeling attainment at the Salt River Area monitors on 12/12/05 and 12/13/05, but only if High Pollution Watch days are added to HPAs; otherwise this measure would have no impact	Moderate impact, if sources near monitors cease dust generation activities on HPA days under stagnant conditions. this impact is diluted by the fact that HPAs are not always issued on PM-10 exceedance days during stagnant conditions.	State
22. Model cumulative impacts for new or modified existing sources - This measure would require industry to include the impacts of adjacent facilities, when modeling the PM-10 impacts of new facilities or modifications to existing facilities and obtain offsets if concentration thresholds are exceeded.	\$109/ton (paving an unpaved road as an emission offset for a new or modified facility); this number will increase as low cost alternatives are selected.	No impact; emissions increases would be offset	No impact	Moderate impact, if the new or modified facility is adjacent to other large sources of PM-10 emissions and is also near a PM-10 monitor	State

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23. Conduct night time and weekend inspections - This measure would involve proactive inspections of industrial and construction sources of PM-10 during non-daylight hours and on weekends.	\$10,752/ton (2 additional trucks and drivers per facility)	18 tons (0.4% of target) for every 1% increase in Rule 316 effectiveness; 313 tons/yr (6.8% of target) for every 1% increase in Rule 310 compliance	Moderate impact, when the increased compliance rate is applied to sources near the Salt River Area monitors on 12/12/05 and 2/15/06.	Moderate impact, if proactive inspections reduce PM-10 emissions during pre-dawn hours under stagnant conditions near a monitor; negligible value of weekend inspections because exceedances rarely occur on weekends, except as a result of high winds	County
Nonroad Activities					
24. Ban or discourage use of leaf blowers on high pollution advisory days - This measure would restrict or prohibit the use of leaf blower on days when ADEQ issues a High Pollution Advisory (HPA).	\$21,851/ton (deferring leaf blowing until the next scheduled visit)	0.004 tons/yr (0.0% of target) per leaf blower not used on a HPA day	Negligible impact	Negligible impact	State, County
25. Encourage use of leaf vacuums to replace blowers - This measure would provide incentives and publicity to encourage replacement of leaf blowers with vacuum units.	N/A (leaf vacuums are not currently designed to capture PM-10; so the emissions reduction would be zero)	No reduction in annual emissions	No impact	No impact	State, County

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26. Reduce off-road vehicle use in areas with high off-road vehicle activity (e.g., Goodyear Ordinance) - impoundment or confiscation of vehicles for repeat violations - This measure would involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area.	\$230/ton (offroad activity in Goodyear ceased within a week)	45 tons/yr (1.0% of target) for restricting off-road vehicle use of 2.1% of the passive open space in the PM-10 nonattainment area (in Goodyear).	No impact in the Salt River Area monitors as measures to reduce off-road vehicle use have already been implemented; moderate impact if implemented in the area impacting the Higley monitor on 1/24/06.	Moderate impact if off-road vehicle use is curtailed near PM-10 monitors.	State, County, local govts
27. Create a fund to provide incentives to retrofit nonroad diesel engines and encourage early replacements with advanced technologies - This measure would establish funding to offer incentives for owners of older nonroad diesel equipment to retrofit or repower existing engines or replace with newer, less-polluting technology.	\$44,000/ton of PM-2.5 (particulate filter); \$52,000/ton of PM-2.5 (oxidation catalyst)	18 tons/yr (0.4% of target) per 500 nonroad diesel engines are retrofitted with particulate filters and oxidation catalysts	Negligible impact	Negligible impact	State
28. Update the statutes to require ultra-low sulfur diesel fuels for nonroad equipment - This measures would revise ARS 41-2083J to require use of ultra-low sulfur fuel in nonroad engines before the federally-mandated deadline of June 2010. (Locomotives and marine vessels do not have to use the new fuel until 2012.)	\$16,000/ton of sulfates (use of ultra-low sulfur fuel in a typical nonroad engine)	37 tons/yr (0.8% of target) if all nonroad engines in the PM-10 nonattainment area use ultra-low sulfur diesel fuel	Negligible impact	Negligible impact	State

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Paved Roads					
29. Sweep streets with PM-10 certified street sweepers - This measure would require all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 certified sweepers.	\$4/ton (marginal cost and benefit of buying a PM-10 certified instead of a noncertified sweeper)	45 tons/yr (1.0% of target) per PM-10 certified street sweeper	Negligible impact	Moderate impact, if PM-10 certified units are used to sweep streets with high silt loadings on a frequent basis near PM-10 monitors	County, local govts
30. Retrofit onroad diesel engines with particulate filters - This measure would establish a program with financial incentives to encourage the voluntary retrofit pre-2007 onroad diesel vehicles with particulate filters and oxidation catalysts.	\$107,000/ton of PM-2.5 (particulate filters); \$133,000/ton of PM-2.5 (oxidation catalysts)	39 tons/yr (0.8% of target) per 1,000 vehicles retrofitted with a diesel particulate filter and oxidation catalyst.	Negligible impact	Negligible impact	State, County, local govts
31. Repave or overlay paved roads with rubberized asphalt - This measure would involve repaving or overlaying paved roads with materials that reduce PM-10 emissions by reducing vehicle tire wear.	\$631,000/ton (for freeways); \$2,681,000/ton (for arterials); \$4,290,000/ton (for collectors); 50% reduction in PM-10 emissions due to reduced tire wear	0.032 tons/yr (0.0% of target) per centerline mile of repaved arterial, carrying 10,000 vehicles per day or more	Negligible impact	Negligible impact	State, County, local govts

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Unpaved Parking Lots					
32. Pave or stabilize existing unpaved parking lots (e.g., upgrade to Phoenix Parking Code) - strengthen enforcement - This measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas.	\$1,754/ton (paving a parking lot of one-tenth of an acre); \$11,292/ton (applying dust palliatives to the same size lot)	94 tons/yr (2.0% of target) per 1% increase in compliance with dust control rules/ordinances for unpaved parking lots	Large impact, when the increased compliance rate is applied to the unpaved parking areas that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06	Large impact, if the increased compliance reduces emissions from unpaved parking and vehicle maneuvering areas near a PM-10 monitor	County, local govts
Unpaved Roads					
33. Pave or stabilize existing dirt roads and alleys - This measure would revise Rule 310.01 to require paving or stabilizing of dirt roads that carry less than 150 vehicles per day (e.g., more than 50 vehicles per day).	\$109/ton (applying dust palliatives to 224.3 miles of unpaved roads averaging 120 vehicles/day)	32 tons/yr (0.7% of target) per mile of dirt road that is paved	Moderate impact, if dirt roads in the Salt River Area and the Higley modeling domain are paved by 2009.	Large impact, if dirt roads near a monitor are paved	County, local govts
34. Limit speeds to 15 miles per hour on high traffic dirt roads - This measure would require 15 mph speed limit signs to be posted on dirt roads in the PM-10 nonattainment area that carry 50-150 vehicles per day.	\$3,337/ton (speeds are reduced from 25 to 15 mph on 224.3 miles of unpaved roads averaging 120 vehicles/day)	0.5 tons/yr (0.01% of target) per mile of dirt road with 15 mph speed limits; since this would be difficult to enforce, the assumed control effectiveness is low (i.e., 18%).	Negligible impact	Negligible impact	County, local govts

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35. Prohibit new dirt roads including those associated with lot splits - This measure would prevent the construction of new dirt roads (e.g., prohibit wildcat subdivisions; require paving of roads before issuing a building permit) in the PM-10 nonattainment area.	\$2,646/ton (paving one mile of new dirt road)	Without this measure, projected 2007-2009 PM-10 emissions for unpaved roads will increase each year	Moderate impact if new dirt roads are created in the Salt River Area or in the modeling domain for the Higley monitor before 2009.	Moderate impact, if new dirt roads are created near monitors.	State, County
Unpaved Shoulders					
36. Pave or stabilize unpaved shoulders - This measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (e.g., more than 2,000 vehicles or 50 heavy duty trucks per average weekday).	\$18,452/ton (paving of 8-foot dirt shoulders)	40 tons/yr (0.9% of target) for every 1% increase in Rule compliance for trackout and dragout	Large impact, when an increased compliance rate is applied to dragout and trackout emissions from unpaved shoulders that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06 and the Higley monitor on 1/24/06.	Large impact, if the increased compliance reduces trackout and dragout emissions attributable to unpaved shoulders near a PM-10 monitor	County, local govts

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENTING ENTITY
Unpaved Access Points					
37. Pave or stabilize unpaved access to paved roads - This measure would require additional measures to reduce trackout and dragout from vehicles accessing paved public roads via unpaved access points (e.g., require paving of access points onto roads with high traffic, e.g., 5,000 vehicles or 50 heavy duty trucks per average weekday).	\$168,025/ton (gravel pad plus grizzly used by 40 heavy duty trucks exiting a facility with one unpaved access point each day)	40 tons/yr (0.9% of target) for every 1% increase in Rule compliance for trackout and dragout	Large impact, when an increased compliance rate is applied to the dragout and trackout emissions from unpaved access points that contributed to exceedances at the Salt River Area monitors on 12/12/05 and 2/15/06 and the Higley monitor on 1/24/06.	Large impact, if the increased compliance reduces trackout and dragout emissions attributable to unpaved access points near a PM-10 monitor	County, local govts
Vacant Lots					
38. Strengthen and increase enforcement of Rule 310.01 for vacant lots - This measure would increase the frequency of inspections and enforcement actions to reduce dust emitted by vacant lots.	\$239,000/ton (100% reduction in trespass rates on vacant lots due to placement of barriers)	3 tons/yr (0.07% of target) for every 1% increase in Rule compliance for vacant lots	Small impact, when an increased compliance rate is applied to vacant lots that contributed to the exceedances at Salt River Area monitors on 2/15/06 and the Higley monitor on 1/24/06.	Moderate impact, if the increased inspections and enforcement make the soil on vacant lots near monitors less erodible during high winds	County

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENTING ENTITY
39. Restrict vehicular use and parking on vacant lots (e.g., Phoenix) - This measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant land.	\$230,700/ton (100% reduction in trespass rates on vacant lots due to placement of barriers)	3 tons/yr (0.07% of target) for every 1% increase in Rule compliance for vacant lots	Small impact, when an increased compliance rate is applied to vacant lots that contributed to the exceedances at Salt River Area monitors on 2/15/06 and the Higley monitor on 1/24/06.	Moderate impact, if the strengthened requirements make the soil on vacant lots near monitors less erodible during high winds	County, local govts
40. Enhanced enforcement of trespass ordinances and codes - This measure would increase the enforcement of vehicle trespass ordinances and codes for vacant lots.	\$51,600/ton (75% reduction in trespass rate due to posting of signs)	3 tons/yr (0.07% of target) for every 1% increase in Rule compliance for vacant lots	Small impact, when an increased compliance rate is applied to vacant lots that contributed to the exceedances at Salt River Area monitors on 2/15/06 and the Higley monitor on 1/24/06.	Moderate impact, if the enhanced enforcement of vehicle trespass on vacant lots near monitors decreases soil erosion during high winds	County, local govts
41. Vacant lots stabilized by County if owners do not respond, liens put on property if necessary (e.g., Clark County) - This measure would give the County the authority to place a lien against a property owner in order to recover the costs of stabilizing a vacant disturbed lot.	\$235,700/ton (100% reduction in trespass rate due to placement of barriers)	3 tons/yr (0.07% of target) for every 1% increase in Rule compliance for vacant lots	Small impact, when an increased compliance rate is applied to vacant lots that contributed to the exceedances at Salt River Area monitors on 2/15/06 and the Higley monitor on 1/24/06.	Large impact, if the authority to place liens is used to stabilize vacant lots near monitors so that soil erosion is minimized during high winds.	State, County

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENTING ENTITY
Traffic Flow Improvements					
42. Schedule improvements on parallel streets to retain alternate route options along major north/south and east/west corridors - This measure would involve providing and publicizing alternate routes to divert traffic around road construction projects; with the objective of improving traffic flow and reducing vehicle idling.	Unknown (decreases in idling and increases in speeds have no impact on PM-10 emissions, except sulfates)	Negligible impact	Negligible impact	Negligible impact	Local govts
Transit					
43. Build park and ride lots earlier - This measure would accelerate the construction of park and ride lots to increase transit ridership and carpooling.	Unknown (PM-10 from bus exhaust and fugitive dust emissions can be higher than cars; need to carpool or achieve 75% bus occupancy to reduce PM-10 emissions)	Negligible impact	Negligible impact	Negligible impact	Local govts
44. Coordinate public transit services with Pinal County - This measure would involve coordination between Pinal County and public transit agencies in Maricopa County to provide transit service and reduce the number of vehicle trips between the two counties.	Unknown (PM-10 from bus exhaust and fugitive dust emissions can be higher than cars; need to achieve 75% bus occupancy to reduce PM-10 emissions)	Negligible impact	Negligible impact	Negligible impact	Local govts

MEASURE	COST-EFFECTIVENESS OF PM-10 EMISSIONS REDUCED (BASIS FOR CALCULATION)	FIVE PERCENT EMISSIONS REDUCTION TARGET = 4,594 TONS OF PM-10 PER YEAR (% OF TARGET)	MODELING ATTAINMENT AT THE SALT RIVER AREA AND HIGLEY MONITORS ON THE HIGHEST PM-10 DAYS IN 2005/2006	ATTAINING PM-10 STANDARD AT ALL MONITORS IN THE NONATTAINMENT AREA IN 2007, 2008 AND 2009	POTENTIAL IMPLEMENTING ENTITY
Woodburning					
45. Increase fines for open burning (currently \$25) - This measure would increase the maximum fine for open burning in ARS Title 49-501 from \$25 per occurrence to a level that would serve as a deterrent (e.g., \$500 per occurrence).	Unknown (No data on # or size of nonpermitted burns; complaints are twice the number for controlled burns; the latter represent 0.01% of the 2005 PM-10 emissions inventory)	Negligible impact	Large impact on modeling attainment at the West 43 rd Avenue monitor on 12/12/05 and 12/13/05	Large impact, if open burning near PM-10 monitors can be curtailed by the imposition of higher penalties	County
46. Restrict use of outdoor fireplaces and pits and ambience fireplaces in the hospitality industry - This measure would prohibit burning in outdoor fireplaces, outdoor pits, and ambience fireplaces in the hospitality industry, and ban other nonessential woodfires on days during the period November 1 - February 15 when ADEQ issues a High Pollution Advisory (HPA).	\$132,000/ton (restrict use on HPA days), \$190,000/ton (retrofit fireplace with EPA-approved device)	Negligible impact	Large impact on modeling attainment at the West 43 rd Avenue monitor on 12/12/05 and 12/13/05, but only if outdoor burning is banned during High Pollution Watches, as well as HPAs.	Moderate impact, if restrictions on outdoor burning on HPA days are enforced near PM-10 monitors; this impact is diluted by the fact that HPAs do not always coincide with PM-10 exceedance days	County

TABLE 4-2

Draft List of Measures Ranked by Increasing Cost Effectiveness

Measure No.	Measure	Cost-Effectiveness (\$/ton of PM ₁₀)	Degree of Confidence In Ranking	PM ₁₀ Emissions Category Impacted by the Measure	Draft 2005 PM ₁₀ Emissions Inventory (tons/yr)	%	2002 Salt River SIP Inventory (tons/yr)	%
29	PM-10 Certified Street Sweepers	\$4	M	Paved Road Dust	13,783	15%	1,482	60%
22	Model Cumulative Impacts	\$109	M	Industry	4,142	5%	301	12%
33	Pave or Stabilize Existing Dirt Roads & Alleys	\$109	M	Unpaved Roads	8,490	9%	0	0%
26	Reduce Off-Road Vehicle Use	\$230	H	Off-Road Vehicle Dust	2,159	2%	0	0%
5	Dedicated Coordinator for Unpaved Roads/Vacant Lots	\$534	M	Unpaved Rds+Vacant Lots	11,499	13%	1	0%
35	Prohibit New Dirt Roads and Lot Splits	\$2,646	H	Unpaved Roads	8,490	9%	0	0%
34	Limit Speeds to 15 mph on Dirt Roads	\$3,337	H	Unpaved Roads	8,490	9%	0	0%
32	Pave or Stabilize Existing Unpaved Parking Lots	\$6,523	M	Unpaved Parking Lots	3,009	3%	1	0%
1	Public Education & Outreach	\$7,898	M	Construction	37,572	41%	337	14%
3	Core Dust Control Training Program	\$9,990	M	Construction	37,572	41%	337	14%
8	Certification Program for Dust-Free Developments	\$10,752	M	Construction	37,572	41%	337	14%
15	Conduct Nighttime Inspections	\$10,752	M	Construction + Industry	41,714	46%	638	26%
23	Conduct Nighttime and Weekend Inspections	\$10,752	M	Construction + Industry	41,714	46%	638	26%
2	Extensive Dust Control Training Program	\$12,494	M	Construction	37,572	41%	337	14%
4	Dust Managers at Large Construction Sites	\$14,285	M	Construction	37,572	41%	337	14%
9	Better-Defined Rule 310 Tarping Requirements	\$14,963	M	Construction	37,572	41%	1,747	70%
28	Require Ultra-Low Sulfur Diesel for Nonroad Equipment	\$16,000	H	Nonroad Exhaust	1,855	2%	341	14%
36	Pave or Stabilize Unpaved Shoulders	\$18,452	M	Unpaved Shoulders	13,783	15%	52	2%
11	Self-Monitoring for Sources Over 50 Acres	\$21,530	M	Construction + Industry	41,714	46%	638	26%
24	Ban or Discourage Leaf Blowers on HPA Days	\$21,851	H	Leaf Blower Dust	843	1%	0	0%
19	Fully Implement Rule 316	\$32,276	M	Industry	4,142	5%	301	12%
27	Incentives for Nonroad Diesel Engine Retrofits	\$48,000	H	Nonroad Exhaust	1,855	2%	341	14%
40	Enhanced Enforcement of Trespass Ordinances & Codes	\$51,600	L	Vacant Lots	1,087	1%	0	0%
12	Mobile Monitoring to Measure PM-10 and Issue NOVs	\$54,233	M	Construction + Industry	41,714	46%	903	36%
16	Increase Inspection Frequency for Permitted Facilities	\$65,765	M	Industry	4,142	5%	301	12%
17	Increase Inspections in Highest PM-10 Density Areas	\$65,900	M	Industry	4,142	5%	301	12%
30	Retrofit Onroad Diesel Engines	\$120,000	H	Onroad Mobile	1,041	1%	36	1%
18	Notify Violators More Rapidly to Promote Immediate Compliance	\$122,575	NA	Construction + Industry	41,714	46%	638	26%
46	Restrict Use of Outdoor Fireplaces & Pits	\$161,000	H	Woodburning	231	0%	0	0%
37	Pave or Stabilize Unpaved Access to Paved Roads	\$168,025	M	Paved Road Dust	13,783	15%	265	11%
39	Restrict Vehicular Use & Parking on Vacant Lots	\$230,700	L	Vacant Lots	1,087	1%	1	0%
41	Vacant Lots Stabilized by County if Owners Do Not Respond	\$235,700	L	Vacant Lots	1,087	1%	0	0%
38	Increase Enforcement of Rule 310.01 for Vacant Lots	\$239,000	L	Vacant Lots	1,087	1%	0	0%
14	Maintenance Requirements for Paved Roads & Parking Lots	\$320,444	H	Industry	4,142	5%	1,483	60%
20	Use PM-10 Certified Sweepers on Private Paved Areas	\$356,350	H	Industry	4,142	5%	301	12%
6	Strengthen Stringency & Enforcement of Trackout Provisions	\$2,499,750	L	Paved Road Dust	13,783	15%	265	11%
31	Repave or Overlay Paved Roads with Rubberized Asphalt	\$2,534,000	H	Paved Roads - Tire Wear	305	0%	4	0%

Source: Maricopa Association of Governments. February 2007.

25	Encourage Use of Leaf Vacuums to Replace Blowers	NA	H	Leaf Blower Dust	843	1%	0	0%
7	Increase Fines for Dust Control Violations & Publish Violators List	Unknown	NA	Construction + Industry	41,714	46%	638	26%
10	Conduct Just-In-Time Grading	Unknown	NA	Construction	37,572	41%	337	14%
13	Cease Dust Generation Activities During Stagnation Conditions	Unknown	NA	Construction + Industry	41,714	46%	952	38%
21	Shift Hours of Operation During Stagnant Conditions Nov-Feb	Unknown	NA	Industry	4,142	5%	566	23%
42	Schedule Improvements on Streets to Retain Alternate Routes	Unknown	NA	Onroad Mobile	1,041	1%	0	0%
43	Build Park and Ride Lots Earlier	Unknown	NA	Onroad Mobile	1,041	1%	0	0%
44	Coordinate Public Transit Services with Pinal County	Unknown	NA	Onroad Mobile	1,041	1%	0	0%
45	Increase Fines for Open Burning (Currently \$25)	Unknown	NA	Woodburning	231	0%	0	0%

TABLE 4-3

Draft List of Measures Ranked by Decreasing Impact on Five Percent Reduction Target

Measure No.	Measure	Estimated Impact on 5% Emissions Reduction (tons/yr)	5% Target = 4,594 tons/yr (% of target)	Basis for Reduction (See Note#)	Cost-Effectiveness (\$/ton of PM ₁₀)	Modeling Attainment	Attainment at Monitors
15	Conduct Nighttime Inspections	425	9.3%	Per 1% increase in compliance (1)	\$10,752	Large	Large
11	Self-Monitoring for Sources Over 50 Acres	331	7.2%	Per 1% increase in compliance (2)	\$21,530	Large	Large
18	Notify Violators More Rapidly to Promote Immediate Compliance	331	7.2%	Per 1% increase in compliance (2)	\$122,575	Large	Moderate
23	Conduct Nighttime and Weekend Inspections	331	7.2%	Per 1% increase in compliance (2)	\$10,752	Moderate	Moderate
2	Extensive Dust Control Training Program	313	6.8%	Per 1% increase in compliance (3)	\$12,494	Large	Moderate
3	Core Dust Control Training Program	313	6.8%	Per 1% increase in compliance (3)	\$9,990	Large	Moderate
4	Dust Managers at Large Construction Sites	313	6.8%	Per 1% increase in compliance (3)	\$14,285	Large	Large
8	Certification Program for Dust-Free Developments	313	6.8%	Per 1% increase in compliance (3)	\$10,752	Large	Minor
9	Better-Defined Rule 310 Tarping Requirements	313	6.8%	Per 1% increase in compliance (3)	\$14,963	Large	Minor
1	Public Education & Outreach	131	2.9%	0.5% decrease in regional VMT	\$7,898	Negligible	Minor
12	Mobile Monitoring to Measure PM-10 and Issue NOVs	94	2.0%	Per 1% increase in compliance (4)	\$54,233	Large	Large
32	Pave or Stabilize Existing Unpaved Parking Lots	94	2.0%	Per 1% increase in compliance (4)	\$6,523	Large	Large
5	Dedicated Coordinator for Unpaved Roads/Vacant Lots	45	1.0%	Per 1% increase in compliance (5)	\$534	Moderate	Large
26	Reduce Off-Road Vehicle Use	45	1.0%	Benefit of the Goodyear ordinance (6)	\$230	Moderate	Moderate
29	PM-10 Certified Street Sweepers	45	1.0%	Per PM-10 certified sweeper	\$4	Negligible	Moderate
6	Strengthen Stringency & Enforcement of Trackout Provisions	40	0.9%	Per 1% increase in compliance (7)	\$2,499,750	Large	Large
14	Maintenance Requirements for Paved Roads & Parking Lots	40	0.9%	Per 1% increase in compliance (7)	\$320,444	Large	Large
20	Use PM-10 Certified Sweepers on Private Paved Areas	40	0.9%	Per 1% increase in compliance (7)	\$356,350	Large	Large
36	Pave or Stabilize Unpaved Shoulders	40	0.9%	Per 1% increase in compliance (7)	\$18,452	Large	Large
37	Pave or Stabilize Unpaved Access to Paved Roads	40	0.9%	Per 1% increase in compliance (7)	\$168,025	Large	Large
30	Retrofit Onroad Diesel Engines	39	0.8%	Per 1,000 trucks retrofitted	\$120,000	Negligible	Negligible
28	Require Ultra-Low Sulfur Diesel for Nonroad Equipment	37	0.8%	All nonroad equipment (8)	\$16,000	Negligible	Negligible
33	Pave or Stabilize Existing Dirt Roads & Alleys	32	0.7%	Per mile of unpaved road	\$109	Moderate	Large
16	Increase Inspection Frequency for Permitted Facilities	18	0.4%	Per 1% increase in compliance (9)	\$65,765	Moderate	Moderate
17	Increase Inspections in Highest PM-10 Density Areas	18	0.4%	Per 1% increase in compliance (9)	\$65,900	Moderate	Moderate
19	Fully Implement Rule 316	18	0.4%	Per 1% increase in compliance (9)	\$32,276	Moderate	Moderate
27	Incentives for Nonroad Diesel Engine Retrofits	18	0.4%	Per 1% increase in compliance (9)	\$48,000	Negligible	Negligible
38	Increase Enforcement of Rule 310.01 for Vacant Lots	3	0.1%	Per 1% increase in compliance (10)	\$239,000	Small	Moderate
39	Restrict Vehicular Use & Parking on Vacant Lots	3	0.1%	Per 1% increase in compliance (10)	\$230,700	Small	Moderate
40	Enhanced Enforcement of Trespass Ordinances & Codes	3	0.1%	Per 1% increase in compliance (10)	\$51,600	Small	Moderate
41	Vacant Lots Stabilized by County if Owners Do Not Respond	3	0.1%	Per 1% increase in compliance (10)	\$235,700	Small	Large
34	Limit Speeds to 15 mph on Dirt Roads	0.5	0.0%	For dirt roads with 50-150 ADT (11)	\$3,337	Negligible	Negligible
31	Repave or Overlay Paved Roads with Rubberized Asphalt	0.032	0.0%	Per centerline mile of high ADT arterial	\$2,534,000	Negligible	Negligible
24	Ban or Discourage Leaf Blowers on HPA Days	0.001	0.0%	Per residence not blowing on a HPA day	\$21,851	Negligible	Negligible
35	Prohibit New Dirt Roads and Lot Splits	Reduces base emissions	NA	No future growth in unpaved road miles	\$2,646	Moderate	Moderate

Source: Maricopa Association of Governments. February 2007.

7	Increase Fines for Dust Control Violations & Publish Violators List	Negligible	NA	Unknown	Negligible	Negligible
10	Conduct Just-In-Time Grading	Negligible	NA	Unknown	Negligible	Negligible
13	Cease Dust Generation Activities During Stagnation Conditions	Negligible	NA	Unknown	Large(12)	Moderate
42	Schedule Improvements on Streets to Retain Alternate Routes	Negligible	NA	Unknown	Negligible	Negligible
43	Build Park and Ride Lots Earlier	Negligible	NA	Unknown	Negligible	Negligible
44	Coordinate Public Transit Services with Pinal County	Negligible	NA	Unknown	Negligible	Negligible
45	Increase Fines for Open Burning (Currently \$25)	Negligible	NA	Unknown	Large	Large
46	Restrict Use of Outdoor Fireplaces & Pits	Negligible	NA	\$161,000	Large	Moderate
21	Shift Hours of Operation During Stagnant Conditions Nov-Feb	None	NA	Unknown	Large(12)	Moderate
22	Model Cumulative Impacts	None	NA	\$109	None	Moderate
25	Encourage Use of Leaf Vacuums to Replace Blowers	None	NA	NA	None	None

Notes:

1. Per 1% increase in compliance with Rules 310 (from 49% to 80%), 310.01 for unpaved roads and unpaved parking lots (from 20% to 80%), and 316 (from 54% to 80%)
2. Per 1% increase in compliance with Rules 310 (from 49% to 80%) and 316 (from 54% to 80%)
3. Per 1 % increase in compliance with Rule 310 (from 49% to 80%)
4. Per 1 % increase in compliance with Rule 310.01 for unpaved roads and unpaved parking lots (from 20% to 80%)
5. Per 1% increase in compliance with Rule 310.01 for unpaved roads (from 20% to 80%) and vacant lots (from 68% to 80%)
6. Based on ATVs being removed from 2.1% of the passive open space in the PM-10 nonattainment area.
7. Per 1% increase in compliance with Rule 310.01 trackout provisions (from 20% to 80%)
8. In the PM-10 nonattainment area
9. Per 1% increase in compliance with Rule 316 (from 54% to 80%)
10. Per 1% increase in compliance with Rule 310.01 for vacant lots (from 68% to 80%)
11. Assumes a compliance rate of 20% due to difficulty in enforcing the 15 mph speed limit.
12. If measure is expanded to include High Pollution Watches and windy days; otherwise, no impact.

addition, the information generated during the measure evaluation process was also presented to the Arizona Legislature to assist them in their deliberations and stakeholder process for the air quality legislation, S.B. 1552, passed in 2007.

DESCRIPTION OF MEASURES IN THE PRELIMINARY DRAFT COMPREHENSIVE LIST OF MEASURES TO REDUCE PM-10 PARTICULATE MATTER

The following is a description of the measures in the Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter. These descriptions are from the Analysis of Particulate Control Measure Cost Effectiveness report in Appendix B, Exhibit 2.

1. PUBLIC EDUCATION AND OUTREACH (e.g., CLARK COUNTY) WITH ASSISTANCE FROM LOCAL GOVERNMENTS

In January 2007, the Maricopa County Board of Supervisors launched the Bring Back Blue clean air initiative, which is a comprehensive outreach program designed to educate the public on the health effects and sources of particulate matter emissions and reduce the PM₁₀ emissions in Maricopa County. After meeting with stakeholders (including Arizona Department of Environmental Quality [ADEQ], Maricopa Association of Governments [MAG], and health organizations), conducting market research, and receiving public input, an extensive media campaign was developed, which includes television, radio and print ads, billboards, brochures, posters, and a program website (www.bringbackblue.org). The campaign aims to curtail activities that contribute to the PM₁₀ inventory in the area by asking the public, among others, to reduce vehicle travel, avoid driving on dirt roads, avoid use of dust blowing and PM₁₀-emitting gardening equipment, reduce outdoor burning activities, and conserve electricity. The 2007 budget for the Bring Back Blue initiative is set at \$1.025 million.

Similar programs have been implemented in other areas in the country. In Las Vegas, NV, the O-lluminate Ozone program and Dust Campaign involve an annual budget of about \$1 million to cover, among others, TV, radio and newspaper ads, billboards, school programs, educational public events throughout the year, and full-time program coordinators. In Sacramento, CA, the Spare the Air program is aimed at educating the public and reducing vehicle travel, along with associated emissions, during days with forecasted high ozone levels. During the 2006 ozone season (six warmer months), the Spare the Air program budget of over \$500,000 included the cost for TV and radio airtime for alerts during forecasted high-ozone days, TV and radio commercials, and processing of air quality monitoring and meteorological data to create forecasts for upcoming days.

Suggested Implementing Entity

This program is being coordinated by the Maricopa County Air Quality Department.

Cost

Based on consultation with Clark County, NV, which has a similar public outreach campaign, the Bring Back Blue initiative was approved with a 2007 budget of about \$1.025 million. The budget covers the cost for the media campaign, public outreach, and additional program development (i.e., additional promotional material, further public outreach, and other media expansions).

Emission Reduction

Because the Bring Back Blue campaign is new in Maricopa County, direct estimates of the associated PM₁₀ emission benefits are not available. Vehicle trip reduction estimates are available from a similar outreach program in Sacramento, CA, the Spare the Air program, which is designed to control emissions of ozone precursors during days with forecasted high ozone levels.

Averaged over the last seven ozone seasons, public surveys revealed that about 1.8% of drivers purposefully reduced their driving due to the Spare the Air campaign in Sacramento. In addition, each driver reduced his or her driving an average of 2.8 trips per day. Assuming an average trip length of about 10 miles (based on U.S. DOT Travel Trends), the VMT reduction due to the Spare the Air program amounts to about 1.4% of the total VMT in the Sacramento region. Although the Sacramento and Maricopa County programs have similar costs on a per-day basis, the target number of PM₁₀ nonattainment area households for the Bring Back Blue campaign is more than 2.5 times higher than the Sacramento region. Therefore, adjusting the reduction by the ratio of the program's cost per target area household, the Maricopa County daily VMT is projected to be reduced by about 0.5% due to the Bring Back Blue program in 2007, which is equivalent to about 0.36 tons of PM₁₀ per day from vehicle exhaust and re-entrained dust from paved and unpaved roads. This represents a conservative estimate, as reductions from other PM₁₀ sources addressed by the campaign—such as gardening equipment, electricity use, and outdoor burning activities—are not included.

Cost Effectiveness

Using the projected 2007 benefit of 0.36 tons of PM₁₀ per day and the daily program cost of \$2,808, the estimated cost-effectiveness ratio is \$7,898/ton of PM₁₀.

Implementation Issues/Comments

Compliance with this measure is voluntary, so credit taken for this measure could be subject to EPA limitations.

2. EXTENSIVE DUST CONTROL TRAINING PROGRAM (e.g., CLARK COUNTY)

The Maricopa County Air Quality Department is currently offering two types of training classes: (1) Dust Control Application, and (2) Rule 310 Dust Training. The first explains

how to properly fill out dust control applications and is offered 10 times per year. The second provides guidance to help keep businesses in compliance with the requirements of Rule 310 and is offered 11 times per year. Attendance is voluntary. No direct credit is claimed in the Maricopa County emissions inventory for the conduct of these courses; however, the benefits are theoretically captured in the overall estimate of Rule Effectiveness.

Clark County offers dust control training to local contractors and other major sources of PM₁₀ emissions to familiarize them with air quality regulations, the most effective ways to reduce PM₁₀ emissions, and air pollution health effects. Upon completing the course and passing an examination, each participant is issued a Certificate of Completion (i.e. a dust card). The courses are offered weekly at Clark County facilities and frequently presented offsite to employees of individual companies. All onsite supervisors and foremen are required to have a dust card. The Certificate is valid for a period of three years, after which a refresher course is required for recertification. The course is not free—the cost of the training is recovered through a nominal fee of \$35. Discussions with Clark County's Department of Air Quality and Environmental Management (DAQEM) indicated that over 20,000 people have completed the training course since it was instituted in 1998.

This measure would adopt a more extensive dust training program, like the one currently being offered by Clark County.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

In evaluating the cost of this measure, we assumed that all construction supervisors and foremen would complete a 4-hour dust control training class. The key change in behavior resulting from the class would be an increase in the frequency of on-site watering. The combined cost of class attendance and increased watering frequency on a 50-acre construction site was estimated to cost \$839/day. For a six-month construction project, the total cost would be \$111,670.

Emission Reduction

Emission benefits were computed using the WRAP fugitive dust handbook and assuming a baseline 50% control efficiency as reported in the recently completed Rule Effectiveness Study. The analysis assumed that the benefit of this measure would be to operate an additional water truck full-time on site to further control fugitive dust emissions. This assumption produced an increase in control efficiency to 70% and an emission reduction of 8.9 tons of PM₁₀ per 50-acre project. This translates into a daily reduction of 135 lbs/day of PM₁₀.

Cost Effectiveness

The overall cost-effectiveness is estimated to be \$6.25/lb or \$12,494 per ton of PM₁₀ reduced. Since a typical residential construction project is estimated to run for six months, the training costs are distributed over six projects over the 3-year life of the training class certificate.

Implementation Issues/Comments

This analysis assumed that Maricopa County would be reimbursed by attendees for the cost of the course. No additional enforcement effort was assumed to ensure that supervisors and foremen comply with the training requirements.

3. CORE DUST CONTROL TRAINING PROGRAM WITH VIDEO PROVIDED TO LOCAL GOVERNMENTS AND PRIVATE SECTOR

The Maricopa County Air Quality Department is currently offering two types of training classes: (1) Dust Control Application, and (2) Rule 310 Dust Training. The first explains how to properly fill out dust control applications and is offered 10 times per year. The second provides guidance to help keep businesses in compliance with the requirements of Rule 310 and is offered 11 times per year. Attendance is voluntary. No direct credit is claimed in the Maricopa County emissions inventory for the conduct of these courses; however, the benefits are theoretically captured in the overall estimate of Rule Effectiveness.

As described in Measure #2, Clark County has implemented a more extensive dust control training program. One element of that program includes distributing video recordings of the course to broaden the number of people exposed to dust control education within the community. Due to the length of the course, which is several hours, the video presents a shortened version and excludes certain segments (including the exam).

This measure would develop a set of training materials, including videos, manuals, forms, tests, etc., that constitute a core training program. These materials could then be used to “train the trainer” so that individual cities and towns could extend the reach of the existing training program.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

The cost of producing the “core” training materials is estimated to be \$100,000. No additional staff time is assumed to implement the program. The key change in behavior resulting from the training would be an increase in the frequency of on-site watering. The primary cost of increased compliance is assumed to be the operation of an additional

watering truck on a half-time basis. The combined cost of the video and increased watering frequency on a 50-acre construction site was estimated to cost \$420/day. For a six-month construction project, the total cost would be \$55,782.

Emission Reduction

Emission benefits were computed using the WRAP fugitive dust handbook and assuming a baseline 50% control efficiency as reported in the recently completed Rule Effectiveness Study. The analysis assumed that the benefit of this measure would be to operate an additional water truck half time on site to further control fugitive dust emissions. This assumption produced an increase in control efficiency to 62% and an emission reduction of 5.6 tons of PM₁₀ per 50-acre project. This translates into a daily reduction of 84 lbs/day of PM₁₀.

Cost Effectiveness

The overall cost effectiveness is estimated to be \$4.99/lb or \$9,990 per ton of PM₁₀ reduced.

Implementation Issues/Comments

The analysis assumes that videos are distributed free of charge and that the cost of production is distributed across 1,600 project per year.

4. DUST MANAGERS REQUIRED AT CONSTRUCTION SITES OF 50 ACRES AND GREATER (e.g., CLARK COUNTY)

Under Rules 310, 310.01 and 316, responsibility for dust control is currently vested in either the project owner and/or operator of a dust generating operation. Their knowledge and efforts to implement controls are reflected in the current assessment of Rule Effectiveness.

Clark County requires projects having 50 or more acres of actively disturbed soil at any time to designate a full-time Dust Control Monitor. This requirement is applicable to multiple sites that are individually permitted at less than 50 acres each, if they are adjacent to one another, under common ownership, or are within a master planned community, and together they have 50 acres or more of disturbed soil. The training requirements to obtain a dust monitor card are significantly greater than those required for a dust card. Training lasts a full day and includes information on soil mechanics, water application, regulations, enforcement, etc. Applicants are required to obtain a Visual Emissions Evaluation (VEE) Certificate, so that they can measure plume opacity at the job site. The course is not free; the cost of the training is recovered through a fee of \$500 per person.

This measure would adopt the Clark County requirements for Dust Monitors for projects with 50 acres or more of actively disturbed soil.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

In evaluating the cost of this measure, we assumed that all Dust Managers would complete a day-long dust control training class and obtain a VEE. The key change in behavior resulting from the class would be an increase in the frequency of on-site watering. The analysis also assumed that the salary commanded by a Dust Manager would be 10% above the salary of a foreman or construction supervisor. The combined cost of employing a Dust Manager on a full-time basis and increasing watering frequency on a 167-acre construction site, of which 50 acres or 30% would be actively disturbed at any one time, was estimated to be \$2,865/day. For a six-month construction project, the total cost would be \$381,067.

Emission Reduction

Emission benefits were computed using the WRAP fugitive dust handbook and assuming a baseline 50% control efficiency as reported in the recently completed Rule Effectiveness Study. The analysis assumed that the benefit of this measure would be to operate an additional water truck full-time on site to further control fugitive dust emissions. This assumption produced an increase in control efficiency to 70% and an emission reduction of 26.7 tons of PM₁₀ per 167-acre project. This translates into a daily reduction of 402 lbs/day of PM₁₀.

Cost Effectiveness

The overall cost effectiveness is estimated to be \$7.14/lb or \$14,285 per ton of PM₁₀ reduced. Since a typical residential construction project is estimated to run for six months, the training costs are distributed over six projects over the three-year life of the training class certificate.

Implementation Issues/Comments

This analysis assumed that Maricopa County would be reimbursed by attendees for the cost of the course. No additional enforcement effort was assumed to ensure that Dust Managers would comply with the training requirements. While this measure is less cost effective than Measures #2 or #3, it is anticipated that compliance under this approach may in fact be higher. The reason is that a single individual with clear authority and responsibility for dust control is likely to be more effective than an approach that distributes responsibility.

5. DEDICATED ENFORCEMENT COORDINATOR FOR UNPAVED ROADS AND VACANT LOTS (e.g., CLARK COUNTY)

Maricopa County does not currently have a position dedicated to inspecting unpaved roads and vacant lots. Instead, responsibility is distributed across a staff of inspectors. Unpaved road enforcement is active, but conducted in response to complaints. Vacant lot enforcement has become proactive with inspections of literally thousands of lots in late 2006. The recently completed Rule Effectiveness Study determined that vacant lots and open areas have a rule effectiveness of 68%. Maricopa County, however, did not include any benefit from Rule 310.01 in the estimate of 8,490 tons of PM₁₀ emitted from vehicles operating on unpaved roads. Unpaved road emissions are a significant source of PM and are estimated to account for 9.3% of the PM₁₀ emitted within the nonattainment area in 2005. While this may be an overestimate of the emissions, the recent analysis of the effectiveness of Rule 310.01 did not address unpaved roads (the focus instead was on vacant lots), so the level of enforcement in 2005 is unclear.

Currently, Rule 310.01 requires emissions from unpaved roads (including alleys) with traffic levels exceeding 150 vehicles per day to be controlled by one of the following methods:

- Pave;
- Apply dust suppressants; or
- Uniformly apply and maintain surface gravel.

The non-paving measures are subject to stabilization and opacity limitations. Vacant lots are subject to trespass and stabilization controls within 60 days following discovery of vehicle use.

Clark County has placed substantial emphasis on controlling emissions from unpaved roads and vacant lots. Discussions with Clark County staff indicated that while no single position is dedicated to tracking activity on unpaved roads and vacant lots, a significant portion of a supervisor's time and that of related inspectors is focused on this activity. Overall, it is estimated that roughly three full-time staff positions are focused solely on unpaved roads and parking lots in Clark County.

Recognizing the significance of fugitive dust emissions from unpaved roads and vacant lots, this measure would establish a dedicated enforcement coordinator with responsibility for tracking activity on these facilities and enforcing Rule 310.01 requirements as appropriate.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Costs

There are two elements of cost for this measure: enforcement and palliative application. The enforcement cost includes the salary of a full-time coordinator, a dedicated vehicle, and a \$10,000/year budget for obtaining traffic counts. According to tests conducted in 1995 by MCDOT, the most cost-effective palliative is Ligno 10, which has an application cost of \$769/mile. The combined cost of enforcement and palliative application is estimated to be \$3,767 mile per year.

Emission Reduction

The MCDOT study computed a control efficiency of 21.9% compared to uncontrolled conditions when applied once per year. This measure was assumed to be applied to the higher traffic unpaved roads included in the 2005 Periodic Emission Inventory, which were assumed to have traffic levels of 120 vehicles per day. This measure was estimated to reduce fugitive dust emissions by 7.0 tons per mile per year.

Cost Effectiveness

The overall cost effectiveness of this measure is estimated to be \$0.27/lb or \$534/ton.

Implementation Issues/Comments

The MCDOT data need to be investigated more to ensure that the Ligno 10 can remain effective on higher-volume unpaved roads. Stabilizing roads will make it easier to drive faster and raise speed control and liability issues. Before this measure can be implemented, data on traffic volumes will have to be collected to identify candidate roads for stabilization.

6. STRENGTHEN STRINGENCY AND ENFORCEMENT OF THE TRACKOUT PROVISIONS OF RULE 310 AND RULE 310.01

PM₁₀ emissions are produced indirectly by soil tracked out of construction or industrial sites onto paved, publicly maintained roads. Maricopa County estimates that paved roads produced 13,783 tons or 15% of the PM₁₀ emitted annually within the nonattainment area in 2005. Research supported by MAG has confirmed that trackout is a significant source of fugitive dust within the Salt River Basin and that its contribution to monitored values could be higher than suggested by the inventory estimates.

Currently, MCAQD Rule 310 requires trackout or spillage that exceeds 50 feet in length on public roads to be removed immediately. For visible trackout that is less than 50 feet in length, Rule 310 requires removal once per day at the end of working hours. To prevent trackout, owners are currently required to implement one of the following control measures:

- Install either a grizzly or wheel wash system at each access point;
- Install a gravel pad at least 30 feet wide, 50 feet long and 6 inches deep; or
- Pave from the point of access for a centerline distance of 100 feet and width of 20 feet.

Recent analysis of Rule 310 indicates that its effectiveness is on the order of 50% and suggests that there is an opportunity for improvement. This measure would reduce the allowable trackout or spillage length by 50% and increase the frequency of inspections at locations with a history of violations.

Suggested Implementing Agency

This measure would be implemented by Maricopa County under Rule 310.

Cost

The principal cost of this measure, which will involve increased access point sweeping, will be borne by industry. A key assumption is that those facilities with high trackout rates will require frequent sweeping (assumed to be once every 2 hours or 5 times per day). To simplify the calculations, it is also assumed that each facility has only one access point. The cost of increased sweeping is estimated to be \$2,561 per access point per year. The cost of increased enforcement is estimated to be \$3,766 per access point per year. The total per access point per year is \$6,326. The original analysis assumed that \$/mile sweeping cost provided by the County would be charged to both transit miles to the job site and miles swept. Further review determined that this approach inflated the overall cost of sweeping since brooming and washing activities of the sweeper would not be in use during transit to the job site. Therefore, the cost of sweeping is now based solely on the miles swept at the job site.

Emission Reduction

The benefit of the increased sweeping frequency was estimated by first computing the amount of material that would be dropped by 40 heavy-duty trucks exiting a facility each day. The baseline estimate assumed the access point is not currently being swept. The control scenario assumes that the access point is swept every two hours during work hours. The benefit computed for this measure is estimated to be 215 lbs of PM₁₀ per access point per year. The original analysis assumed that the length of trackout being swept was 25 feet. A review of the trackout analysis contained in the Salt River TSD showed a minimum measured trackout length of 455 feet. The analysis was revised to include this value, which significantly increased the length of road being swept and the pounds of PM₁₀ reduced per access point.

Cost Effectiveness

The cost effectiveness of this measure is estimated to be \$33.85/lb and \$67,653/ton.

Implementation Issues/Comments

The benefits of this measure are dependent on assumptions about the baseline compliance with Rule 310. This analysis assumed full compliance with Rule 310, which significantly deflates the amount of material that is tracked-out and inflates the cost effectiveness of the measure.

7. INCREASE FINES FOR DUST CONTROL VIOLATIONS AND PUBLISH LIST OF VIOLATORS

The primary goal of the Maricopa County Air Quality Department's penalty policy is to deter future violations by recovering the economic benefit of noncompliance plus an additional deterrence amount that reflects the seriousness of the violation. The amount of a penalty determined under this policy is determined by the following factors:

- A gravity component that is dependent on the severity of a violation;
- The economic benefit of noncompliance;
- The Department's enforcement action costs; and
- Consideration of mitigating factors.

Penalties calculated using this guidance are only used in settlement negotiations. In the event that settlement is not possible and litigation is needed to achieve compliance, ARS 49-513 provides authority for the County Attorney to file an action in Superior Court to recover a civil penalty of "not more than" \$10,000 per day per violation.

Discussions with Maricopa County enforcement staff indicated that prior to July 2005, the County Attorney was responsible for settlement negotiations. At that time there was a backlog in uncompleted settlements that stretched back to 2003 and the penalties averaged less than \$1,000 per violation. Starting in July 2005, the Enforcement Division assumed responsibility for settlement negotiations. Since that time the backlog in settlements has dropped to a year and the average cost of a penalty has increased significantly. Current levels are approaching \$10,000 for repeat violators and a statute increase will be required to achieve the increase in fines targeted by this measure.

A monthly summary of all settlement cases and penalties assessed is currently provided on the County's website. Each monthly summary includes a description of high profile settlements and a listing of each settlement including the business name, address, location and date of the violation, due date, settlement date and amount of the settlement. This practice appears to satisfy the requirement proposed in this measure to publish a list of violators.

Industry response to the increase in average penalties assessed has assumed several forms:

- Settlement negotiations are taking longer (the number of meetings required to reach closure has increased);
- Lawyers are frequently representing alleged violators; and
- Industry has started to hire County inspection/enforcement staff to improve their ability to comply with the dust control rule requirements.

The recently completed rule effectiveness study calculated the following rates for each of the dust control rules:

- Rule 310 – 49% (based on an evaluation of earthmoving sources);
- Rule 310.01 – 68% (based on an evaluation of vacant lots and open areas); and
- Rule 316 – 54% (using an EPA default value because of an insufficient sample of inspected facilities).

These values were calculated using data collected in calendar year 2006, barely one year after the Enforcement Division assumed responsibility for settlement negotiations. Given that behavior change is a lagged response and it has taken time to ratchet up the average amount of penalties assessed, it is expected that the current rule effectiveness rates are higher than calculated in the recent study. A search for an elasticity measuring industry response to an increase in assessed penalties found that none exist. Lacking this information it is not possible to estimate current rule effectiveness levels.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

No estimate of the cost of implementing and complying with this measure is available.

Emission Reduction

No estimate of the emissions benefits of this measure is available.

Cost Effectiveness

No estimate of the cost effectiveness of this measure is available.

Implementation Issues/Comments

Given that the average value of assessed penalties has increased and the maximum penalties assessed for repeat offenders is approaching the ARS defined limit of \$10,000 per violation per day, the governing statute, ARS 49-513 would need to be revised in order to implement the increased fines envisioned in this measure. An alternate, possibly more effective method of meeting the goals of this measure could be realized through increasing

the number of inspections/year of permitted facilities and job sites. This is because the annual cost of noncompliance will increase more through an increase in the number of inspections and related settlements than it will through an increase in maximum value of the penalty levied per violation.

Discussions with Clark County staff found that increased penalties produce higher compliance rates. They too have a \$10,000 per violation per day statutory limit, but have increased penalties by noting separate violations and imposing fines for every day on which a violation occurs. In some cases, penalties have been in the range of \$200,000 - \$300,000 per NOV. Companies/individuals receiving large penalties have been more cooperative in meeting with the County to work on long-term company-wide Dust Compliance Plans in exchange for lower fines.

8. ESTABLISH A CERTIFICATION PROGRAM FOR DUST FREE DEVELOPMENTS TO SERVE AS AN INDUSTRY STANDARD

A check of the serious PM₁₀ nonattainment areas, Clark County, San Joaquin Valley and South Coast and a broader web search confirmed that this measure has not been implemented anywhere else. It represents a fundamentally different approach to reducing fugitive dust, not through regulation, but through the development of incentives (i.e., this measure offers a carrot for improved compliance not a stick). The proposed incentive would be the establishment of a certification program and related public relations campaign that provides publicity value (i.e., bragging rights) for those developments that are certified to be dust free.

Many steps would be required to implement this measure. First, criteria would need to be established that define acceptable emission levels for a dust free development. These levels would need to be negotiated with the industry. Criteria to be considered would include: dust control practices, opacity limits, equipment specifications (e.g., limits on the age and emission rate of construction equipment, fuel specifications, etc.), rule effectiveness, etc. A process for certification would need to be established and might include requirements addressing documentation, measurement/monitoring and inspection. A public awareness program would need to be created to inform the public of the benefits of developments certified as meeting these criteria.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

No estimate of the cost of implementing and complying with this measure is available. However, cost elements would include:

- Establishing a program;
- Program operation;

- Public Awareness; and
- Industry implementation of incremental control measures needed to be certified as dust free.

Emission Reduction

No estimate of the emissions benefits for this measure is available. The magnitude of the reduction will depend on the benefits of the incremental control measures that are implemented and the level of industry participation. An estimate of the potential benefits can be derived from applying the difference between the current rule effectiveness level for Rule 310 (which is 49%) and the EPA target of 80% rule effectiveness to the 2005 estimate of construction industry PM₁₀ emissions in the nonattainment area (i.e., 31% of 37,572 tons/year times an assumed control efficiency rate of 90%). The maximum potential benefit of this measure would be an unknown portion of 10,483 tons/year or 11% of the PM₁₀ emission inventory. The point of this discussion is that based on the 2005 emission inventory, measures directed at the construction industry offer significant potential for PM₁₀ emission reductions.

Cost Effectiveness

While no specific estimate of the cost effectiveness of this measure is available, an approximate estimate was prepared by quantifying the incremental amount of watering that would be required to achieve the difference between a 49% and 80% reduction in fugitive dust from a representative development (i.e., 50 acre site). Using this approach, the cost effectiveness of this measure was estimated to be \$10,752/ton of PM₁₀ reduced. This estimate, however, does not include the administrative expenses of designing and implementing the program. These costs would increase the \$/ton estimate for this measure.

Implementation Issues/Comments

Discussions should be held with industry to gauge their interest in participating in a dust free certification program before undertaking the effort required to implement this measure.

9. REVISE RULE 310 TARPING REQUIREMENTS TO INCLUDE EMPTY BACKHAUL

Materials such as sand, dirt, gravel, rock, etc. transported in uncovered trucks can be spilled onto public roadways. This material can then be pulverized by traffic, become airborne, and contribute to the paved road fugitive dust emissions (currently estimated to be 13,783 tons per year or 15% of the nonattainment area inventory in 2005).

Emissions from uncovered trucks are currently regulated under Rule 310. Section 308 requires owners and/or operators of haul trucks to meet minimum freeboard requirements, prevent spillage or loss of bulk material, cover all haul trucks with a tarp or suitable

enclosure, and clean or cover the interior of a cargo compartment before any empty truck leaves the site when traveling onto paved areas accessible to the public.

This measure is designed to eliminate emissions produced during empty backhauls after a truck has dumped its load of material. Current cleaning and/or tarping practices have been found to be ineffective. This measure would require empty trucks to fully enclose the cargo compartment prior to traveling onto public roadways.

Suggested Implementing Entity

This measure would be implemented by Maricopa County.

Cost

The only cost addressed in this analysis is the labor required to thoroughly cover the empty truck bed and the extra time added to complete daily activity. No increase in enforcement effort was assumed. Vehicles were assumed to make 13 round trips per day and incur an additional cost of \$13.42 for compliance per day.

Emission Reduction

The combined emission reduction from 13 trips is estimated to be 1.67 lbs of PM₁₀ per truck day.

Cost Effectiveness

The cost effectiveness is estimated to be \$8.04/lb or \$16,085/ton of PM₁₀.

Implementation Issues/Comments

The analysis assumes that inspectors would be issuing NOVs as part of their daily rounds and that no additional effort would be required to enforce this measure.

10. CONDUCT JUST-IN-TIME GRADING

Disturbed soil is vulnerable to erosion by both wind and water. Sediment controls to limit water pollution impacts from disturbed soil are well established. Stabilization requirements to minimize wind erosion have been implemented by communities that exceed ambient PM₁₀ standards under high wind conditions. Examples of those communities include Clark County, Nevada, Coachella Valley, California, Maricopa County, and Bullhead City Arizona. Bullhead City is the only community that has implemented a just-in-time grading control measure. A description of the ordinance implementing this measure is contained in the community's Maintenance Plan. It requires "control of dust during grading and excavation," it also requires "that the property be left in a condition that prevents dust from arising." A review of Maricopa County's Rule 310, however, shows that it requires all disturbed surface areas to be stabilized under the following conditions:

- Pre-activity work practices;
- Work practices during operations;
- Temporary stabilization (up to 8 months) required during weekends, after work hours and on holidays; and
- Permanent stabilization required within 8 months of ceasing dust-generating operations.

Since these requirements do not specify any time period when stabilization requirements are in force, it does not appear that a just-in-time grading requirement will provide any additional emission reductions that would not come from the enforcement of Rule 310.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

No estimate of the cost of implementing and complying with this measure is available.

Emission Reduction

This measure does not appear to offer an emissions benefit.

Cost Effectiveness

No estimate of the cost effectiveness is available.

Implementation Issues/Comments

Discussions with the County confirmed that there is no apparent benefit for this measure.

11. ESTABLISH CONTINUOUS MONITORING REQUIREMENTS FOR PERMITTED SOURCES LARGER THAN 50 ACRES

The continuous monitoring of fenceline PM₁₀ concentrations has been imposed on larger surface mining operations in several Western states over the past decade. The intent of this enforcement measure is to provide assurance that ambient air quality standards are not being violated in sensitive areas near these types of projects. Because of the persistence of PM₁₀ violations in the Salt River area, the Maricopa County Air Quality Department has asked that a similar approach be evaluated for use at larger construction and mineral production facilities in this area. Under this concept, a facility would be required to operate two or more continuous PM₁₀ monitoring instruments and take corrective dust control action whenever the monitors reported exceedances of a specified dust concentration threshold. For the purpose of this analysis, we assumed that the

corrective dust control action would consist of increased watering of haul roads and other actively disturbed soil surfaces.

To implement this measure local regulations or permits for earth moving and mineral productions facilities would need to be modified to include continuous monitoring requirements.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The costs of monitoring and watering were derived from cost data reported from earlier studies and local sources. For the cost of monitoring, we assumed that a regulated facility of more than 50 acres would be required to install four optical particle counters along fencelines in each of the cardinal directions from the center of dust-generating activities. As has been required of some energy facility construction sites adjacent to residential areas in California, we assumed that the monitors would run unattended on battery power during business hours and that acquired data would be downloaded and evaluated at the end of each day by a technical consultant. If the data demonstrated an exceedance of an adopted dust threshold, additional watering of nearby dust sources, under direction of the technical consultant, would be performed the next day and each subsequent day as necessary to maintain compliance at the monitor. We assumed that one additional water truck per facility would be pressed into service, and that this truck would be rented from an equipment supply service. The contract cost of the monitoring and dust control consultant was estimated to be \$54,700 per year, and the additional watering cost was estimated to be \$111,500 using a leased water truck.

Emission Reduction

Emission reductions were calculated as the difference between baseline and controlled emission scenarios for onsite haul roads. The baseline scenario assumed 45% control of dust emissions (49% rule effectiveness x 90% control efficiency) from onsite construction activities, based on the rule effectiveness study completed by MCAQD in 2007. Uncontrolled construction emissions were estimated to be 46.0 tons of PM₁₀, based on the emission factors published in the WRAP fugitive dust handbook, and baseline emissions incorporating existing controls were estimated to be 20.1 tons for a 50-acre construction project.

The use of an additional water truck was estimated to increase emission control effectiveness to 72.3%, based on data reported by a Midwest Research Institute study of construction dust emissions for the South Coast AQMD in 2001. The increase in control efficiency produced an emission reduction of 7.7 tons of PM₁₀ during the duration of a 6-month, 50-acre residential construction project. This is equivalent to a daily emission reduction of 116 lbs per day of PM₁₀ during each construction day.

Cost Effectiveness

The overall cost effectiveness for this measure is estimated to be \$10.76 per lb or \$21,530 per ton of PM₁₀ reduced. Sierra performed a similar analysis of this measure for San Joaquin Valley. The results of that analysis showed a cost effectiveness ranging between \$231,000 and \$339,000 per ton of PM₁₀ reduced. While the cost assumptions used in that study and this study are quite similar, the assumptions about emission benefits are significantly different. The San Joaquin Valley study assumed that monitoring would only indicate a need for watering on 5% of construction days. As a result, the high cost of continuous monitoring produced a small emissions benefit and a high \$/ton cost effectiveness estimate. In this analysis it was assumed that watering would occur every day of construction to avoid the cost of an NOV. Thus, essentially the same cost of monitoring would produce a large emissions benefit and a cost effectiveness that is an order of magnitude lower than reported in the San Joaquin Valley study. The actual cost effectiveness would depend on the behavior of the contractor operating the construction site.

Implementation Issues/Comments

This analysis assumed the use of contract monitoring and dust control services. The cost effectiveness of this measure will be less if monitoring equipment and additional water trucks are owned by the construction contractor.

12. CONDUCT MOBILE MONITORING TO MEASURE PM-10 AND ISSUE NOVs

The Maricopa County Board of Supervisors recently approved funding for a state-of-the-art mobile air-monitoring program. The County is currently taking bids on the instruments that will be used to equip a vehicle to measure pollutants on a mobile basis. The vehicle will be able to perform measurements on a variety of regulated pollutants, including ozone, carbon monoxide (CO), PM_{2.5}, PM₁₀, NOx and a range of hazardous air pollutants (HAPs). The bids are still open on a number of pieces of equipment; therefore the County does not expect it to become operational for another 18-24 months (i.e., circa 2009). When the vehicle does become operational, it will not be dedicated to PM measurements as it will be used to investigate a broad range of complaints.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The cost of a mobile monitoring van is assumed to be equal to the funds approved by the Board of Supervisors (i.e., \$500,000). Assuming a useful life of 8 years, the annualized cost of the van will be \$93,722 per year. Assuming that the vehicle is dedicated to fugitive dust enforcement, which it is not, the van could be used to monitor 6 properties per day and support the issuance of 2 NOVs per day. Based on these assumptions and the labor

required to operate the van and supervise its operation the average cost per property per day is estimated to be \$102. This value increases to \$107 per property per day when the annualized daily cost of gravel pad is included.

Emission Reduction

Emission benefits were computed based on the assumption that facilities receiving NOVs undertake either trackout control or sweeping. Trackout control was assumed to come from the construction and maintenance of a 50' gravel pad. Based on an EPA analysis the control efficiency of a 50' gravel bed is 46%. When this value was combined with soil deposition rates, initial silt loadings, size of the trackout area and average Salt River traffic volumes, this measure was estimated to reduce 3.9 lbs of PM₁₀ per property per day.

Cost Effectiveness

The cost effectiveness of this measure is estimated to be \$54,233 per ton of PM₁₀ reduced.

Implementation Issues/Comments

The cost and cost effectiveness of this measure could be substantially improved by creating a vehicle that is dedicated to fugitive dust control. Such a vehicle would require much less instrumentation to monitor PM_{2.5}/PM₁₀ concentrations as opposed to NOx, HAPs, etc. With a lower initial cost and the same level of PM₁₀ reductions the cost effectiveness of the measure would be improved.

13. CEASE DUST GENERATION ACTIVITIES DURING STAGNANT CONDITIONS

An analysis of meteorological data collected for days when the ambient PM₁₀ standard has been exceeded in recent years in the Salt River shows:

- Wind speeds are less than 1 meter/second;
- Dispersion is limited because of low mixing heights (i.e., inversions);
- There is limited transport of emissions from outside of the area; and
- Stagnant conditions persist for multi-day periods.

An analysis of the monitoring data shows that maximum concentrations are typically recorded in the early morning hours. This is because the combination of low wind speeds and mixing heights allow concentrations to build over time. High levels of activity in the early morning hours add emissions on top of elevated concentrations from the previous day and lead to exceedances. Concentrations typically drop after about 8 am once there has been enough solar heating to lift the mixing height and increase dispersion.

The goal of this measure is to reduce early morning emissions from facilities located within high emission density areas on days when exceedances are expected to occur. A review of meteorological data collected by ADEQ between November 1st and February 15th for the

past 3 years in the Salt River shows that on average the following days were called during that season:

- 8.25 high pollution advisory (HPA) days;
- 8.80 stagnation days occurred; and
- 9.90 exceedances occurred.

This information suggests that participating facilities would need to be able to cease early morning operations on roughly 10 days per season (if High Pollution Watch days are included the number of days would increase to 13). Effort will be required to determine which industries have the flexibility to cease operations during this time period. A variety of implementation issues would need to be investigated and defined to implement this measure, including minimum lead time notification requirements, emission density limits that would define the area of participation, compliance options, the need for tax credits to offset lost production, etc.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

No estimates of the cost of developing, implementing or complying with this measure are currently available.

Emission Reduction

The emission reductions from this measure would be limited. The number of days in which activities cease would be limited, the number of participating facilities would also be limited as would the geographic coverage. As a result, the emission reductions that would accrue to the Five Percent Plan would be quite limited. However, the successful implementation of this measure would significantly enhance the probability of attainment at monitors located in areas with a history of exceedances.

Cost Effectiveness

Insufficient information is available to estimate the cost effectiveness of this measure.

Implementation Issues/Comments

Another option for implementing this measure is to shift the lost hours of operation to another time period. The cost and benefits of this approach are investigated in Measure #21.

14. ESTABLISH MAINTENANCE REQUIREMENTS FOR PAVED ROADS AND PARKING LOTS

During the field study of Salt River fugitive PM_{10} sources conducted in November and December of 2006, visible emissions were observed from vehicle travel over paved parking lots lightly covered with deposited soil. As a result of this observation, a request was made to evaluate the cost effectiveness of maintaining such paved parking lots and roadways by periodic sweeping with PM_{10} -efficient sweepers.

Under this measure, all paved parking lots and roads would be swept at least every two weeks.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The periodic cost of sweeping was estimated from contract data received from the Maricopa County Department of Transportation. A 1-acre paved parking lot was selected for analysis as a typical example. The cost of bi-weekly sweeping of a 1-acre parking lot by a contract service was estimated to be \$871 per year.

Emission Reduction

The emission reductions achieved by periodic sweeping were calculated as the difference in paved road travel emissions for surfaces with two different silt loadings. The activity level for unpaved parking published in the 2005 Maricopa County emission inventory of 100 vehicles per day per acre was used as a default activity level for this analysis. The average travel distance per parking cycle on a 1-acre lot was estimated to be the distance from one corner of a square lot to the center of the lot and back along travel links parallel to the sides of the lot (200 feet). The silt level of an unmaintained parking lot (0.60 g/m^2) was assumed to be twice that of the average Salt River street silt level measured and reported in the Salt River technical support document prepared by ADEQ in 2005. Sweeping by a PM_{10} -efficient sweeper was assumed to remove 86%, as measured in tests conducted by the University of California Riverside on sweepers seeking PM_{10} -efficient certification. We also assumed that a completely cleaned parking lot (i.e., with 100% removal of surface silt) returned to pre-swept silt conditions in 10 days of use, from an engineering estimate published in a South Coast Air Quality Management District cost-effectiveness analysis. On the basis of these assumptions, the emission reduction produced by sweeping a 1-acre parking lot every two weeks was calculated to be 5.4 pounds of PM_{10} per year.

Cost Effectiveness

The overall cost effectiveness is estimated to be \$160.22 per pound, or \$320,444 per ton, of PM₁₀ reduced.

Implementation Issues/Comments

This analysis assumes a relatively low silt loading and low traffic levels of light-duty vehicles operating on parking lots targeted for sweeping. Both of these values are based on engineering estimates. The use of higher values and heavier vehicles, if justified, would improve the calculated cost effectiveness of this measure.

15. CONDUCT NIGHTTIME INSPECTIONS

Currently, inspectors employed by the Maricopa County Air Quality Department (MCAQD) conduct inspections of permitted facilities – construction sites and mineral processing facilities – during normal work hours. Through interviews of mineral facility production staff, we learned that substantial mineral processing and construction activity occurs before daylight during the summer months to take advantage of cooler temperatures, especially for concrete pouring. Nighttime operations also occur to a lesser extent during winter months.

Under this measure, dust control inspections would be conducted during nighttime hours to assure compliance with Rule 310 during these periods. Because the 20% opacity limit in Rule 310 is very difficult to verify and enforce during nighttime hours, we assumed that inspections during these hours would involve use of portable dust monitors and the establishment of new fenceline PM₁₀ concentration limits. We assumed that MCAQD would purchase DustTrak optical particle counters and pay inspectors a nighttime pay differential for working these hours. We also assumed that facility operators would increase the use of watering for additional dust control during nighttime hours if inspections found conditions of noncompliance.

The emission scenario we used in this analysis was a 50-acre residential construction site and that increased watering would involve the use of two additional water trucks during nighttime hours.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The costs of this measure include enforcement and dust control elements. We assumed that verification of compliance at night would be determined through spot monitoring with a portable optical particle counter. Amortized over an 8-year life, the monitor would cost \$3.94 per 50-acre project, assuming that 200 projects were checked each year. Assuming

that each project is inspected four times for two hours each by a MCAQD inspector paid a night differential rate, the additional night inspection costs were calculated to be \$198.68 per project. We also estimated that processing one notice of violation per project would cost an additional \$276.99 per project, for a total of inspection and enforcement costs of \$479.31 per project. The use of two additional water trucks during night work hours was estimated to cost \$54,433 per project. (A 50-acre residential project is assumed to require 6 months to construct, from data contained in the WRAP Fugitive Dust Handbook.) The total cost of this measure was calculated to be \$54,912 per project.

Emission Reduction

For baseline emissions, we assumed that disturbed areas were being watered every four hours, resulting in a control efficiency of 50%, which is close to the current effectiveness of Rule 310 as reported by MCAQD in 2007. The response to this measure was assumed to be the operation of two additional water trucks during nighttime hours. Disturbed areas would be watered every 1.7 hours, resulting in a control efficiency of 79%. By applying these control efficiencies to the uncontrolled nighttime emissions of 17.9 tons per PM_{10} , we computed the emission reduction to be 3.8 tons of PM_{10} per 50-acre project.

Cost Effectiveness

The cost effectiveness of this measure was calculated to be \$5.38 per pound, or \$10,752 per ton, of PM_{10} reduced.

Implementation Issues/Concerns

This analysis assumes that additional dust control at an affected project will be gained through additional watering of actively disturbed areas. If other control techniques are used to reduce PM_{10} emissions, both the magnitudes of emission reduction and cost could change dramatically from the scenario considered in this analysis.

In response to comments, the analysis of this measure was modified to account for the benefit that would result from a higher baseline compliance rate (due to a lagged response to recent increases in settlement fines). To account for this response, the baseline control efficiency was increased from 50% to 70%. One additional watering truck would be required to increase control efficiency from a baseline of 70% to the target of 80%. The cost effectiveness computed for this increment is estimated to be \$10.82 per lb or \$21,631 per ton of PM_{10} reduced.

16. INCREASE INSPECTION FREQUENCY FOR PERMITTED FACILITIES

Maricopa County Air Quality Department (MCAQD) currently conducts formal compliance inspections of the 26 major mineral processing facilities in the Salt River area a total of four times each year. These inspections are comprehensive in that both physical inspections of operating equipment and document reviews of required records are conducted.

Additional inspections of specific equipment, activities, or portions of facilities are conducted on an as-needed basis in responding to complaints.

Under this measure, formal compliance inspections of major facilities would be conducted more frequently. For the purposes of analysis, we assumed that two additional inspectors would be hired by MCAQD and assigned solely to inspections of permitted facilities. Although inspections of permitted facilities would include both stationary sources and construction sites, our analysis looked exclusively at stationary sources. We also assumed that inspections of mineral processing facilities would focus more on evaluations of compliance with operating and emission limitations, and less on recordkeeping requirements, to the extent that each inspector would inspect two permitted facilities per day. We assumed that the predominant violations would be of visible dust limitations on fugitive sources, and that the control option implemented by affected operators would be increases in watering frequencies on haul roads, unpaved traffic areas, and open material transfer operations.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The costs of implementing this measure would include additional inspection and enforcement costs borne by MCAQD, and additional dust control costs borne by facilities found to be out of compliance. The salaries of inspection and enforcement staff were obtained from MCAQD, and the costs of additional watering at affected facilities were based on truck rental prices obtained from a local equipment-leasing firm. Labor rates for water truck operation were obtained from the U.S. Bureau of Labor Statistics for the Maricopa area. The costs of increased inspection and enforcement were estimated to be \$5,900 per facility per year, and additional watering costs were estimated to be \$139,300, for a total of \$145,200 per year per facility.

Emission Reductions

We computed emission reductions as the difference in emissions for onsite material transport over unpaved haul roads when roads were watered every four hours versus every two hours. From the 2002 emission inventory published in the Salt River PM₁₀ Technical Support Document compiled by ADEQ, we reviewed the annual mineral production rates of the larger facilities operating in the Salt River area and selected 500,000 tons per year as a benchmark for analysis. We computed an uncontrolled haul road emission factor for an on-highway haul truck, and applied a calculated control efficiency resulting from road watering every four hours in 2002 to derive a 2002 emission factor for onsite hauling of 1.13 lb/VMT. By dividing total annual haul road emissions reported in the TSD by this emission factor, we estimated that total haul road VMT was 177,940 miles in 2002 for Salt River facilities. By dividing this VMT by the total production rate reported by these facilities of 5,684,987 tons, we computed the onsite average haul distance of mineral product to be

0.031 VMT per ton. We computed onsite haul road emissions for the benchmark facility by multiplying this value by 500,000 tons per year to derive an annual emission estimate of 17,670 pounds of PM₁₀ in 2002. Because control regulations have become more restrictive since 2002, for a 2006 emission baseline we assumed that haul roads are being watered every two hours. By estimating a control efficiency for haul road watering every two hours, we computed annual baseline haul road emissions to be 8,835 pounds of PM₁₀.

Under this measure, we assumed that haul road watering frequency would be increased to once per hour. Using the same methodologies, we estimated a control efficiency for this level of watering and applied it to the uncontrolled emission rate to compute controlled annual emissions to be 4,417 pounds of PM₁₀ per year. The resulting emission reduction in for this benchmark facility is 4,417 pounds of PM₁₀ per year.

Cost Effectiveness

The overall cost effectiveness is estimated to be \$32.88 per pound, or \$65,765 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

This analysis assumes that additional dust control at an affected facility will be gained through additional watering of haul roads and other actively disturbed areas. If other control techniques are used to reduce PM₁₀ emissions, both the magnitudes of emission reduction and cost could change dramatically from the scenario considered in this analysis.

17. INCREASE NUMBER OF PROACTIVE INSPECTIONS IN AREAS OF HIGHEST PM₁₀ EMISSIONS DENSITIES

The Arizona Department of Environmental Quality (ADEQ) developed an emission inventory of Salt River sources for use in modeling impacts as part of the Salt River study in 2004-2005. The allocation of emissions to modeling grid cells indicated that the cells having highest PM₁₀ emissions densities were those containing the mineral processing operations of the larger production facilities. An increase in the number of proactive inspections of these facilities will result in costs and emission reductions very similar to those analyzed in Measure #16 (Increase Inspection Frequency for Permitted Facilities). One additional cost component under this measure would be the expense of training facility operations foremen in dust control practices through a course developed by the Maricopa County Air Quality Department (MCAQD).

For the purposes of analysis, we assumed that two additional inspectors would be hired by MCAQD and assigned solely to inspections of mineral production facilities in the Salt River area. We also assumed that inspections of mineral processing facilities would focus more on evaluations of compliance with operating and emission limitations, and less on recordkeeping requirements, to the extent that each inspector would inspect two permitted facilities per day. We assumed that the predominant violations would be of visible dust limitations on fugitive sources, and that the control option implemented by affected

operators would be increases in watering frequencies on haul roads, unpaved traffic areas, and open material transfer operations.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The costs of implementing this measure would include additional inspection and enforcement costs borne by MCAQD, training costs borne by permitted facilities, and additional dust control costs borne by facilities found to be out of compliance. The salaries of inspection and enforcement staff were obtained from MCAQD, and the costs of additional watering at affected facilities were based on truck rental prices obtained from a local equipment-leasing firm. Labor rates for operations foremen attending dust control classes and operators driving water trucks were obtained from the U.S. Bureau of Labor Statistics for the Maricopa area. The costs of increased inspection and enforcement were estimated to be \$5,900 per facility per year, training costs were estimated to be \$300 per year (assuming training is repeated every three years), and additional watering costs were estimated to be \$139,353, for a total of \$145,553 per year per facility.

Emission Reductions

We computed emission reductions as the difference in emissions for onsite material transport over unpaved haul roads when roads were watered every four hours versus every two hours. From the 2002 emission inventory published in the Salt River PM₁₀ Technical Support Document compiled by ADEQ, we reviewed the annual mineral production rates of the larger facilities operating in the Salt River area and selected 500,000 tons per year as a benchmark for analysis. We computed an uncontrolled haul road emission factor for an on-highway haul truck, and applied a calculated control efficiency resulting from road watering every four hours in 2002 to derive a 2002 emission factor for onsite hauling of 1.13 lb/VMT. By dividing the total annual haul road emissions reported in the TSD by this emission factor, we estimated that total haul road VMT was 177,940 miles in 2002 for Salt River facilities. By dividing this VMT by the total production rate reported by these facilities of 5,684,987 tons, we computed the onsite average haul distance of mineral product to be 0.031 VMT per ton. We computed onsite haul road emissions for the benchmark facility by multiplying this value by 500,000 tons per year to derive an annual emission estimate of 17,670 pounds of PM₁₀ in 2002. Because control regulations have become more restrictive since 2002, for a 2006 emission baseline we assumed that haul roads are being watered every two hours. By estimating a control efficiency for haul road watering every two hours, we computed annual baseline haul road emissions to be 8,835 pounds of PM₁₀.

Under this measure, we assumed that haul road watering frequency would be increased to once per hour. Using the same methodologies, we estimated a control efficiency for this level of watering and applied it to the uncontrolled emission rate to compute controlled

annual emissions to be 4,417 pounds of PM₁₀ per year. The resulting emission reduction for this benchmark facility is 4,417 pounds of PM₁₀ per year.

Cost Effectiveness

The overall cost effectiveness is estimated to be \$32.95 per pound, or \$65,899 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

This analysis assumes that additional dust control at an affected facility will be gained through additional watering of haul roads and other actively disturbed areas. If other control techniques are used to reduce PM₁₀ emissions, both the magnitudes of emission reduction and cost could change dramatically from the scenario considered in this analysis.

18. NOTIFY VIOLATORS MORE RAPIDLY TO PROMOTE IMMEDIATE COMPLIANCE

This measure would require inspectors that observe visible dust violations to inform on-site personnel so that corrective measures can be taken to eliminate activities causing the violation. Inspectors typically contact on-site staff at the time a NOV is issued about the need for corrective actions. Discussions with the County indicate that while this is the norm for industrial operations, it is frequently difficult to make contact with vacant lot property owners when visible land disturbance is discovered. Typically, no one is on the property at the time the disturbance is noted. Rule 310 provides 60 days for owners to stabilize disturbances on vacant lots, unpaved lots, etc. once they receive a letter notifying them of the violation. A NOV is only issued after the landowner fails to respond to the initial letter (i.e., 60 days after issuance of the letter). Discussions with the County indicate that frequently it takes time to identify the owner and resolve the problem. The response time is governed by the financial resources of the owner and their understanding of the options available to them to correct the violation.

The goal of this measure is to reduce the time available for compliance once violations have been identified. Any activity producing elevated emissions during winter months must be eliminated as soon as possible.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

No estimate of the cost of the enforcement expense of implementing this measure is available. The cost of compliance depends on the form of stabilization chosen by the owner to eliminate the disturbance.

Emission Reduction

Unpaved parking lots are estimated to produce 3,009 tons per year in the 2005 PM₁₀ nonattainment area. Windblown dust is estimated to produce 1,087 tons of PM₁₀ in the 2005 inventory. No estimate of emissions from delayed compliance in these source categories is available.

Cost Effectiveness

The cost effectiveness of this measure depends on the form of stabilization selected to correct the violation. The minimum value is estimated to be \$6,100 per ton of PM₁₀ reduced (by using palliatives to stabilize unpaved parking lots, see Measure #32 – Pave or Stabilize Existing Unpaved Parking Lots) and the maximum value is estimated to be \$239,050 per ton of PM₁₀ reduced (by placing a rock barrier to eliminate trespass activity, see Measure #38 – Strengthen and Increase Enforcement of Rule 310.01 for Vacant Lots).

Implementation Issues/Concerns

While the benefits of this measure may contribute little to the Five Percent Plan, they will aid attainment at monitoring sites experiencing high wind exceedances. Education about control option alternatives may be the key to the successful implementation of this measure.

19. FULLY IMPLEMENT RULE 316

Maricopa County adopted Rule 316 in 1993 to control emissions from commercial, nonmetallic mineral processing plants and rock product plants. PM₁₀ emissions from these facilities are generated during the mining, processing and handling (i.e., transporting, loading/unloading, conveying, crushing, screening, mixing and storing) of nonmetallic minerals. Unpaved roads and trackout are examples of area sources of PM₁₀ emissions from facility operations. Historically, Rule 316 has contained only emission limitations that apply to industrial processes and not fugitive dust control measures specific to area sources located at nonmetallic mineral processing facilities. Facilities with area sources subject to Rule 316 have been required to comply with fugitive dust control measures in Rule 310.

Rule 316 was revised in 1999 to make the existing standards consistent with revisions to the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR, Part 60, Subpart OOO). Revisions to Rule 316 were also adopted in 2005 to incorporate best available control measures (BACM) and most stringent measures (MSM) that were included in the Salt River State Implementation Plan (SIP). Revisions addressing industrial operations included process controls (i.e., enclosures, watering systems, operational overflow warning systems/devices and fabric filter baghouses) and process emission limitations (i.e., stack emission limitations). Revisions added to control emissions from fugitive dust sources, included:

- Applying dust suppressants;
- Installing and maintaining rumble grates, wheel washers, vehicle washers and truck washers;
- Installing and maintaining gravel pads from rumble grates and washers to facility exits;
- Paving from rumble grates to wheel washers and vehicle washers;
- Stabilizing haul/access roads and facility entries and exits;
- Stabilizing open storage piles and material handling;
- Ceasing active operations during a high wind event; and
- Cleaning paved internal roads.

The addition of the fugitive dust controls eliminated the need for sources subject to Rule 316 to comply with Rule 310 area source requirements. Revisions to Rule 316 underwent a formal rulemaking process which quantified the costs, benefits and cost effectiveness of the proposed changes. Comments on those estimates were received and responded to in the final rulemaking.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The Rulemaking presented estimates of the annualized cost required to implement the rule for three facility sizes:

- Large-Sized Facility – \$101,314 - \$116,067
- Medium-Sized Facility #1 – \$92,755 - \$107,508
- Medium-Sized Facility #2 – \$86,717 - \$101,469
- Small-Sized Facility – \$22,653 - \$44,976

Emission Reduction

The Rulemaking presented the following annual PM₁₀ emission reduction estimates:

- Large-Sized Facility – 17.11 tons
- Medium-Sized Facility #1 – 11.7 tons
- Medium-Sized Facility #2 – 7.71 tons
- Small-Sized Facility – 0.61 tons

Cost Effectiveness

The Rulemaking presented the following estimates of cost effectiveness (i.e., \$/ton of PM₁₀ reduced):

- Large-Sized Facility – \$4,802 - \$5,501
- Medium-Sized Facility #1 – \$6,417 - \$7,347
- Medium-Sized Facility #2 – \$9,126 - \$10,678
- Small-Sized Facility – \$30,087 - \$59,750

Implementation Issues/Comments

Based on the emission reduction estimates presented in the Rulemaking, fully implementing Rule 316 will not significantly impact the required 5% per year emission reduction requirements. These reductions, however, will significantly aid attainment at the monitors and a modeling demonstration of attainment.

20. REQUIRE PRIVATE COMPANIES TO USE PM₁₀ CERTIFIED STREET SWEEPERS ON PAVED AREAS INCLUDING PARKING LOTS

During the field study of Salt River fugitive PM₁₀ sources conducted in November and December of 2006, visible emissions were observed from vehicle travel over paved parking lots lightly covered with deposited soil. As a result of this observation, a request was made to evaluate the cost effectiveness of maintaining such paved parking lots and roadways by periodic sweeping with PM₁₀-efficient sweepers. This measure is identical to the control scenario analyzed in Measure #14 (Establish Maintenance Requirements for Paved Roads and Parking Lots).

Under this measure, all paved parking lots and roads would be swept at least every two weeks.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The periodic cost of sweeping was estimated from contract data received from the Maricopa County Department of Transportation. A 1-acre paved parking lot was selected for analysis as a typical example. The cost of bi-weekly sweeping of a 1-acre parking lot by a contract service was estimated to be \$871 per year.

Emission Reduction

The emission reductions achieved by periodic sweeping were calculated as the difference in paved road travel emissions for surfaces with two different silt loadings. The activity level for unpaved parking published in the 2005 Maricopa County emission inventory of 100 vehicles per day per acre was used as a default activity level for this analysis. The average travel distance per parking cycle on a 1-acre lot was estimated to be the distance from one corner of a square lot to the center of the lot and back along travel links parallel to the sides of the lot (200 feet). The silt level of an unmaintained parking lot (0.60 g/m²)

was assumed to be twice that of the average Salt River street silt level measured and reported in the Salt River technical support document prepared by ADEQ in 2005. Sweeping by a PM₁₀-efficient sweeper was assumed to remove 86%, as measured in tests conducted by the University of California Riverside on sweepers seeking PM₁₀-efficient certification. We also assumed that a completely cleaned parking lot (i.e., with 100% removal of surface silt) returned to pre-swept silt conditions in 10 days of use, from an engineering estimate published in a South Coast Air Quality Management District cost effectiveness analysis. On the basis of these assumptions, the emission reduction produced by sweeping a 1-acre parking lot every two weeks was calculated to be 5.4 pounds of PM₁₀ per year.

Cost Effectiveness

The overall cost effectiveness is estimated to be \$160.22 per pound, or \$320,444 per ton, of PM₁₀ reduced.

Implementation Issues/Comments

This analysis assumes a relatively low silt loading and low traffic levels on parking lots targeted for sweeping. Both of these values are based on engineering estimates. The use of higher values, if justified, would improve the calculated cost effectiveness of this measure.

21. SHIFT HOURS OF OPERATION DURING STAGNANT CONDITIONS IN NOVEMBER THROUGH FEBRUARY

This is a variant of Measure #13, Cease Dust Generating Operations During Stagnant Conditions. The difference is that instead of ceasing operations during the early morning hours that precede violations, participating facilities would start their daily operations after 9 am (the time at which inversions typically breakup) and extend their operations later in the day to offset the lost early morning hours. In contrast to Measure #13, this measure would produce no emission reductions, because operations would be shifted from one time period to another. Therefore, no benefits would accrue to the Five Percent Plan.

As noted in the discussion of Measure #13, participating facilities would need to be able to shift early morning operations on roughly 10 days per season (more if High Pollution Watch days are included). Effort will be required to determine which industries have the flexibility to shift operations during this time period. A variety of implementation issues would need to be investigated and defined to implement this measure, including minimum lead time notification requirements, emission density limits that would define the area of participation, compliance options, the need for tax credits to offset losses in efficiency, etc.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

No estimates of the cost of developing, implementing or complying with this measure are currently available.

Emission Reduction

This measure will produce no reduction in emissions. However, the successful implementation of this measure would significantly enhance the probability of attainment at monitors located in areas with a history of exceedances.

Cost Effectiveness

Insufficient information is available to estimate the cost effectiveness of this measure.

Implementation Issues/Comments

Once agreement is reached on how to implement this measure, effort will be needed to define a communication mechanism which provides adequate lead time for companies to inform their staff that tomorrow's operations will be shifted.

22. MODEL CUMULATIVE IMPACTS FOR NEW OR MODIFIED EXISTING SOURCES

Currently, monitoring data recorded at the Durango Complex and West 43rd Avenue stations show violations of federal PM₁₀ ambient air quality standards. When new facilities, or modifications of existing facilities, are proposed that would result in emissions increases exceeding 70 tons of PM₁₀ per year (referred to as major sources), such emissions increases are required to be offset and a net benefit in air quality must be demonstrated. For new or modified sources that would produce emissions increases of less than 70 tons of PM₁₀ per year (minor sources), no emissions offsets or demonstration of air quality benefit are required. Under this measure, all new or modified source applications would have to include air quality modeling of proposed emissions increases and emissions from existing nearby facilities to determine the cumulative air quality impacts in the area impacted by the new or modified source. If the modeling demonstrated that the federal PM₁₀ ambient air quality standards would be violated, then the application must include emission reduction offsets sufficient to show no violations of standards.

The effect of this measure would be to require cumulative air quality modeling and emission offsets of new or modified sources in areas where modeling revealed violations of federal standards. Since the costs of modeling would be amortized over the life of the project, it is difficult to estimate an annualized cost effectiveness ratio for this component. The cost effectiveness of emissions offsets, however, can be estimated because these would be identical to the cost effectiveness of control measures that facility owners could undertake in the absence of governmental regulatory action. For example, if the proponent of a new minor facility were required to secure emission offsets equal to the proposed

emissions of the new facility, that person could pave or treat public or private unpaved roads or parking areas in the immediate area to generate these offsets. The cost effectiveness of generating these offsets would be the cost effectiveness of the unpaved road or parking lot control technology.

We identified unpaved road dust palliative treatment as the most cost-effective source control that was available to a new facility proponent.

Cost Effectiveness

The overall cost effectiveness of this measure is estimated to be \$0.07 per pound, and \$141 per ton, of PM₁₀ reduced resulting from the treatment of unpaved roads that carry more than 120 but less than 150 vehicles per day with lignosulfonate dust palliative.

Implementation Issues/Comments

This analysis assumes that unpaved roads of sufficient emissions are near any site proposed for construction and operation of a new minor source, such that modeling of source emission increases and unpaved road emission reductions can demonstrate no increase in PM₁₀ concentrations. If other fugitive dust sources must be controlled to provide the needed offsets, then the cost effectiveness of this measure will be correspondingly higher.

23. CONDUCT NIGHTTIME AND WEEKEND INSPECTIONS

This measure is essentially the same as Measure #15, Conduct Nighttime Inspections, except that inspections would also occur on weekends. Currently, inspectors employed by the Maricopa County Air Quality Department (MCAQD) conduct inspections of permitted facilities – construction sites and mineral processing facilities – during normal work hours. Through interviews of mineral facility production staff, we learned that substantial mineral processing and construction activity occurs before daylight during the summer months to take advantage of cooler temperatures, especially for concrete pouring. Nighttime operations also occur to a lesser extent during winter months.

Under this measure, dust control inspections would be conducted during nighttime and weekend hours to assure compliance with Rule 310 during these periods. Because the 20% opacity limit in Rule 310 is very difficult to verify and enforce during nighttime hours, we assumed that inspections during these hours would involve use of portable dust monitors and the establishment of new fenceline PM₁₀ concentration limits. We assumed that MCAQD would purchase DustTrak optical particle counters and pay inspectors a nighttime pay differential for working these hours. We also assumed that facility operators would increase the use of watering for additional dust control during nighttime hours if inspections found conditions of noncompliance.

The emission scenario we used in this analysis was a 50-acre residential construction site and that increased watering would involve the use of two additional water trucks during nighttime hours.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The costs of this measure include enforcement and dust control elements. We assumed that verification of compliance at night would be determined through spot monitoring with a portable optical particle counter. Amortized over an 8-year life, the monitor would cost \$3.94 per 50-acre project, assuming that 200 projects were checked each year. Assuming that each project is inspected four times for two hours each by a MCAQD inspector paid a night differential rate, the additional night inspection costs were calculated to be \$198.68 per project. We also estimated that processing 1 notice of violation per project would cost an additional \$276.99 per project, for a total of inspection and enforcement costs of \$479.31 per project. The use of two additional water trucks during night work hours was estimated to cost \$54,433 per project. (A 50-acre residential project is assumed to require 6 months to construct, from data contained in the WRAP Fugitive Dust Handbook.) The total cost of this measure was calculated to be \$54,912 per project.

Emission Reduction

For baseline emissions, we assumed disturbed areas are watered every four hours, resulting in a control efficiency of 50%, which is close to the current effectiveness of Rule 310 as reported by MCAQD in 2007. By having two additional water trucks operate during nighttime hours, disturbed areas would be watered every 1.7 hours, resulting in a control efficiency of 79%. By applying these control efficiencies to the uncontrolled nighttime emissions of 17.9 tons per PM_{10} , we computed the emission reduction to be 3.8 tons of PM_{10} per 50-acre project.

Cost Effectiveness

The cost effectiveness of this measure was calculated to be \$5.38 per pound, or \$10,752 per ton, of PM_{10} reduced.

Implementation Issues/Concerns

This analysis assumes that additional dust control at an affected project will be gained through additional watering of actively disturbed areas. If other control techniques are used to reduce PM_{10} emissions, both the magnitudes of emission reduction and cost could change dramatically from the scenario considered in this analysis.

24. BAN OR DISCOURAGE USE OF LEAF BLOWERS ON HIGH POLLUTION ADVISORY DAYS

Leaf blowers are used for landscaping maintenance for both commercial and residential areas. They are used to blow away dirt, leaves, small rocks, etc., on landscaped areas and adjacent sidewalks, driveways, and roadways. While they improve the appearance of the landscape, they blow dust particles in the air and contribute to particulate pollution. They also produce exhaust emissions and generate high noise levels. Maricopa County estimates leaf blowers produced 843 tons of fugitive dust or 1% of the PM₁₀ emitted annually within the nonattainment area in 2005.

This measure would involve restricting or prohibiting the use of blowers for landscaping maintenance in Maricopa County on days when monitors are expected to record a violation of the ambient PM₁₀ standard.

Suggested Implementing Agency

Maricopa County and the MAG cities and towns could pass ordinances prohibiting or restricting the use of blowers on High Pollution Advisory Days within their jurisdictions.

Cost

The cost of implementing this measure depends on who is using a blower. Homeowners and full-time maintenance staff at large facilities (e.g., schools, large parks, etc.) can simply delay their use of blowers to another day at no cost. In contrast, contractors who must travel from job to job may incur a cost depending on how they choose to comply with this restriction. Their options to comply include cleaning the job site manually, returning on the next available non-Advisory Day, or returning only on the next regularly scheduled maintenance day. The only option that incurs a cost is the one requiring an unscheduled return to use the blower. This option was estimated to have a cost of \$23 per day per residence.

Emission Reduction

The benefits of this measure depend on whether the use of the blower on the advisory day is completely foregone until the next regularly scheduled maintenance day or whether it is made up on a subsequent non-advisory day. If the blowing activity is made up (i.e., the contractor comes back the next non-advisory day to complete the blowing portion of the job), there is no annual emissions benefit from this measure since it has been delayed from one day to another. If the blowing activity on the advisory day is foregone until the next regularly scheduled maintenance day, an annual emission reduction benefit would accrue. The benefit of foregone blowing is estimated to be 2.1 lbs per day per residence.

There is one other option to comply with this measure, that is, choosing to use a broom rather than a blower to clean paved surfaces. Emission testing by U.C. Riverside,

however, indicates that brooming on concrete produces fugitive dust emissions that are equivalent to those of leaf blowing.

Cost Effectiveness

The only scenario under which a cost-effectiveness estimate can be calculated is for the loss of emissions on an advisory day and under the assumption that the homeowner has to pay for the extra non-advisory visit. Under these conditions, the cost effectiveness of this measure is estimated to be \$10.93/lb or \$21,851/ton of PM₁₀.

Implementation Issues/Comments

Given the options for compliance and the dispersed nature of the activity, this measure would be very problematic to enforce and the benefits highly uncertain.

25. ENCOURAGE USE OF LEAF VACUUMS TO REPLACE BLOWERS

Leaf blowers are used for landscaping maintenance for both commercial and residential areas. They are used to blow away dirt, leaves, small rocks, etc., on landscaped areas and adjacent sidewalks, driveways, and roadways. While they improve the appearance of the landscape, they blow dust particles into the air and contribute to particulate pollution. They also produce exhaust emissions and generate high noise levels. Maricopa County estimates leaf blowers produced 843 tons of fugitive dust or 1% of the PM₁₀ emitted annually within the nonattainment area in 2005.

This measure would involve encouraging the use of leaf vacuums to replace the use of blowers for landscaping maintenance in Maricopa County.

Suggested Implementing Agency

Maricopa County and the MAG cities, towns, school districts and community colleges could provide leadership on this measure and replace blowers with vacuums in their maintenance and clean-up operations. They could also pass an ordinance mandating the phase out and replacement of blowers over a suitable time period.

Cost

Based upon discussions with vendors, the analysis assumed that the purchase price of the typical 3 hp leaf vacuum to be \$275 and that a vacuum has an average life of three years. The operating expenses are estimated to be \$135 per year; this estimate, however, was not included in the analysis since it is roughly equivalent to the cost of operating existing blowers. No attempt was made to quantify the cost of enforcing this ordinance.

Emission Reduction

Previous analysis of this measure assumed collection efficiency of the vacuum bag was assumed to be 98%. This estimate was based on the collection efficiency of industrial fabric filters. Recent testing conducted by U.C. Riverside found that particulate emissions from leaf vacuums are equal to those of leaf blowers even for particles as large as 100 microns in diameter. It appears that leaf vacuum bags are not designed to collect dust.

Cost Effectiveness

The cost effectiveness of this measure is infinite since the emission reduction is zero.

Implementation Issues/Comments

The lack of an emissions benefit invalidates this measure.

26. REDUCE OFF-ROAD VEHICLE USE IN AREAS WITH HIGH OFF-ROAD VEHICLE ACTIVITY

The City of Goodyear recently implemented an ordinance banning the use of off-highway vehicles (OHVs) and all terrain vehicles (ATVs) on unimproved property without the written permission of the property owner. The ordinance was implemented to address numerous complaints about problems caused by OHVs and ATVs operating in the Gila River bed and other desert areas within the City's boundaries. The complaints raised concern about the following impacts:

- Dust clouds significantly reduced drivers visibility on the roads;
- Unhealthy impacts of dust and odor on those with allergies and other medical problems;
- Ecological damage caused by oil, gasoline, tracks and debris; and
- Excessive noise.

The City was also concerned that it could be liable for fines of up to \$10,000 per day for failing to comply with Maricopa County Air Quality Regulations regulating fugitive dust.

The enforcement effort that accompanied the implementation of the ordinance included:

- The preparation and distribution of a brochure entitled "Let's make it clear, Information on the use of all-terrain vehicles (ATVs) and off-highway vehicles (OHVs) in the desert areas in the City of Goodyear."
- Purchase of an off-road vehicle for use by the Police Department to enter areas where OHVs and ATVs were being operated.
- Installation of signs notifying OHV's and ATV's operators of the new ordinance.

- Allocation of staff time to provide a visible enforcement presence in areas where OHVs and ATVs were being operated.

The ordinance makes it unlawful for any person to operate or drive any motor vehicle, motorcycle, minibike, dune buggy, ATV, motor scooter, or other form of transportation propelled by an internal combustion engine on private or public property without prior written permission of the owner of the property. A violation of this requirement is a misdemeanor offense with a fine of up to \$2,500 and/or imprisonment for a period of up to six months.

Discussions with the Chief of the Police indicate that OHV and ATV riders/operators terminated activity within the city boundaries once it became clear the ordinance was being enforced. The approach used to implement the ordinance was to distribute brochures, meet with riders/operators in the field and explain the new requirements and have a visible presence with a vehicle able to chase violators. No extra staff time was required to implement the ordinance and no arrests were made.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

The principal cost components of implementing this measure include the purchase price of the off-road vehicle by the Police Department (\$12,000) and the annual distribution of the brochure to residents (estimated to be \$7,500 per year). Since the City of Goodyear has 7,934 acres of open space, the annualized cost/per year of enforcing this measure is estimated to be \$1.31 per acre.

Emission Reduction

The 2005 PM₁₀ emission inventory estimates that off-road recreational vehicles produced 2,159 tons of PM₁₀ in the nonattainment area. Based on the ratio of open space acreage in the City of Goodyear to the total acreage of the nonattainment area, the City of Goodyear was responsible for 45.3 tons of off-road recreational PM₁₀ emissions. The ordinance appears to have eliminated all of those emissions from within the City's boundaries.

Cost Effectiveness

The cost effectiveness of this measure is estimated to be \$230 per ton of PM₁₀ reduced.

Implementation Issues/Comments

While the City of Goodyear has effectively eliminated off-road emissions within its borders, it is not clear that this activity has been eliminated from within the boundaries of the

nonattainment area. The cost effectiveness of this measure and the magnitude of the emissions from the targeted activity make this an attractive measure for implementation. However, in order for reductions to be realized, the measure would need to be implemented throughout the nonattainment area so that off-road activity is effectively shifted outside of nonattainment area boundaries.

27. CREATE FUND TO PROVIDE INCENTIVES TO RETROFIT NONROAD DIESEL ENGINES AND ENCOURAGE EARLY REPLACEMENT WITH ADVANCED TECHNOLOGIES

Programs that provide financial incentives for reducing PM emissions from nonroad Diesel engines through voluntary retrofit of emission control systems or repowering of equipment with newer engines have been conducted in a number of areas. California's Moyer Program provides one example and materials related to the design and implementation of such programs are available from the Western Regional Air Quality Partnership. In general, these programs require a funding source that distributes funds for repower/retrofit projects that meet specific criteria. There are a wide range of nonroad Diesel engines used in a variety of applications that could be retrofitted or repowered, as well as potential criteria that could be used to determine which engines should be retrofit. Given this, a comprehensive assessment of this measure was not feasible.

In order to illustrate the potential emission benefits, costs, and cost effectiveness of such programs, a measure involving voluntary repowering or retrofitting of Tier 0 (pre-1998 model year) off-road Diesel construction equipment was evaluated. Repower was assumed to be by engines that meet the U.S. EPA's Tier 3 emission standards. Retrofit was assumed to be by either Diesel Oxidation Catalyst (DOC) or Diesel Particulate Filter (DPF). It was also assumed that the fund created would be sufficient to allow for either the repower or retrofit of 500 engines used in tractors, loaders, and backhoes and that the average unit affected is rated at 160 horsepower. Note that equipment retrofit will also necessitate the use of ultra-low sulfur Diesel fuel and will result in a fuel consumption penalty due to increased exhaust system backpressure.

The following table shows the estimated percentage reduction in PM_{2.5} emissions as well as emissions of other regulated pollutants. Reductions associated with repower were estimated using the NONROAD model, while estimates for the emission reductions associated with retrofit were developed from information published by U.S. EPA and CARB regarding verified devices.

Technology	PM_{2.5} Reduction	VOC Reduction	CO Reduction	NOx Reduction
Tier 3 Repower	55%	75%	75%	70%
Diesel Particulate Filters (DPFs)	85-90%	50-90%	50-90%	0
Diesel Oxidation Catalysts (DOC)	20-30%	50-90%	50-90%	0

Implementing Agency

This measure could be implemented by cities, towns, Maricopa County, and the Arizona Department of Transportation.

Costs

Repowering was estimated to cost \$16,000 with an additional \$6,000 for installation. A summary of the cost for retrofits is shown in the following table. The cost for DPFs is estimated at \$4,000 per vehicle based on an average bus retrofit cost of \$7,500, which was scaled downward to account for the lower horsepower rating of the nonroad engines (300 hp for buses versus 160 horsepower for the nonroad equipment). The cost for DOCs is estimated to be \$800 per vehicle based on an average bus retrofit cost of \$1,500 (again scaled downward). In addition to the cost of the retrofit devices, there are costs associated with fuel economy penalties due to the retrofit devices. The estimated fuel economy penalties based on mid-range estimates published by the U.S. EPA for DPFs and DOCs are also shown in the following table.

Technology	Avg Retrofit Cost	Additional Costs
Diesel Particulate Filter (DPF)	\$4,000	~3% fuel economy penalty
Diesel Oxidation Catalyst (DOC)	\$800	~1% fuel economy penalty

Costs for repower were amortized over a ten-year life using a discount rate of 7%. Retrofit costs were amortized over a five-year life using a discount rate of 7% and Diesel fuel was assumed to cost \$2.50 per gallon.

Benefits

The emission reductions associated with the repower of 500 pieces of Tier 0 construction equipment with Tier 3 engines were estimated using the NONROAD model for calendar year 2010. Repower is estimated to reduce PM_{2.5} emissions by 0.03 tons per day. Similarly, the NONROAD model was used to estimate the emission benefits associated with retrofit. The average control efficiency of DPFs and DOCs was assumed to be 85% and 25%, respectively, and estimated PM_{2.5} reductions are 0.04 and 0.01 tons per day.

Cost Effectiveness

Based on the emission reductions and cost estimates discussed above, the average cost-effectiveness ratio for repower was estimated to be \$150,000 per ton of PM_{2.5} emissions eliminated. Assuming a cost of \$2.50 for nonroad Diesel fuel, an incremental cost of 5 cents per gallon for ultra-low sulfur Diesel fuel, and an average fuel usage rate of 4,000 gallons per year, in combination with the retrofit cost numbers shown above, the cost effectiveness was estimated to be \$44,000 and \$52,000 per ton of PM_{2.5} emissions eliminated for DPFs and DOCs, respectively.

Implementation Issues

Care must be taken to ensure that retrofit devices are used for verified/appropriate vehicle applications.

28. UPDATE THE STATUTES TO REQUIRE ULTRA-LOW SULFUR DIESEL FUELS FOR NONROAD EQUIPMENT

Control Measure Description

Arizona Revised Statutes section 41-2083J requires that all Diesel fuel sold in area A comply with a 500 ppm maximum sulfur content limit. Federal regulations contained in Subpart I of Part 80, Title 40 Code of federal regulations also impose limits on the sulfur content of Diesel fuel sold throughout the United States. At present, these regulations restrict the sulfur content of Diesel fuel sold in on-road vehicles to 15 ppm and will impose a similar limit on Diesel fuel sold for use in nonroad vehicles other than locomotives and marine vessels beginning in June 2010. Fuel used in locomotives and marine vessels must meet the 15 ppm sulfur limit beginning in June 2012. Under this measure, section 41-2083J would be revised to require that ultra-low sulfur Diesel fuel (i.e., 15 ppm) be used in nonroad equipment. For purposes of this evaluation, it was assumed that the revised statutes would be effective on January 1, 2008.

Implementing Agency

This measure would be implemented by the Arizona Department of Environmental Quality.

Costs

The U.S. EPA has estimated that compliance with the 15 ppm requirement for on-road engines will increase refining costs by 4 cents per gallon and that the total price increase associated with the 15 ppm sulfur restrictions for nonroad Diesel in the southwestern U.S. (PADD 5) will range from 5 to 7 cents per gallon. However, as noted in the Implementation Issues section below, the actual costs may be higher depending on the availability of 15 ppm Diesel fuel during the 2007 to 2010 period.

Benefits

This control measure will reduce emissions of sulfur oxides from nonroad Diesel equipment. Assuming that the sulfur content of fuel complying with the current 500 ppm limit is actually about 450 ppm, the reduction in fuel sulfur content due to the measure will be approximately 435 ppm. Based on the U.S. EPA's NONROAD Model (version 2005a, Feb. 2006), annual Diesel fuel consumption in Maricopa County by nonroad equipment and vehicles, except locomotives and marine vessels, will be as follows:

2008 - 171,994,675 gallons
2009 - 176,184,778 gallons
2010 - 180,374,871 gallons

Using these figures, an assumed density of 7 pounds per gallon for Diesel fuel, and assuming that 95% of sulfur is converted to SO₂ and 5% to sulfate, the emission reductions due to the control measure are approximately 1.4 tons per day of SO₂ and 0.1 ton per day of directly emitted sulfate. No direct PM emission reductions other than the reduction in sulfate are expected from the use of ultra-low sulfur Diesel fuel in nonroad equipment, although its use will facilitate retrofit of particulate control devices such as traps and Diesel oxidation catalysts.

Cost Effectiveness

Based on the emission reductions quantified above, and an assumed cost of 5 cents per gallon, the cost effectiveness of the proposed control measure is \$16,000 per ton of SO₂ and sulfate emissions eliminated.

Implementation Issues

The refining industry has indicated that there may be supply issues associated with the distribution of 15 ppm Diesel fuel as the federal requirements applicable to on- and nonroad vehicles become effective. To the extent that supply issues arise, costs could be much higher than estimated.

29. SWEEP STREETS WITH PM-10 CERTIFIED STREET SWEEPERS

Although most of the new street sweepers purchased in the Maricopa area in the past several years have been certified as PM₁₀-efficient, there are no local requirements that all new sweepers be certified. This measure proposes that all new sweepers be certified as PM₁₀-efficient. In the evaluation of cost effectiveness for this measure, we assumed that a jurisdiction was able to choose between a non-certified and a certified unit in replacing an existing street sweeper. We also assumed that a new street sweeper would be used to clean all four lanes of arterial streets, and that streets would be swept every two weeks.

Suggested Implementing Agency

This measure would be implemented by Maricopa County and the cities within the PM₁₀ nonattainment area.

Cost

The cost of this measure includes only the differential in purchase price between a certified PM₁₀-efficient sweeper and a non-certified unit. We assumed that there are no differences in operations and maintenance costs or life expectancy for the two types of units. Finally, we assumed that a new sweeper would clean 7.5 centerline-miles per day of 4-lane arterial roads, or a total of 75 centerline-miles of street every 10 working days (the total work days in a two week sweeping interval). The difference in purchase price was estimated to be \$649 per year as amortized over the 8-year useful life of a sweeper. This difference equated to \$8.66 per year per centerline-mile of street.

Emission Reduction

Emission reductions were computed as the difference in PM₁₀ emissions for a typical Salt River arterial street cleaned by each of the two types of sweepers. A PM₁₀-efficient sweeper was estimated to reduce street silt levels by 86%, and a non-certified unit was estimated to reduce silt levels by 55%, based on sweeper tests conducted for the South Coast AQMD sweeper certification program by the University of California Riverside. Streets were assumed to return to equilibrium silt conditions in 10 days after being completely cleaned based on a 1998 South Coast AQMD estimate. We used this information to estimate that silt loadings after a sweeping would rise by 10% of pre-swept levels per day until equilibrium levels were attained. Based on Salt River arterial silt loadings, the emission reductions were calculated to be 11.9 pounds per day, or 2.16 tons per year, of PM₁₀ reduced.

Cost Effectiveness

The cost effectiveness of this measure was calculated to be \$0.002 per pound, or \$4.00 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

This analysis assumes that the maximum equilibrium return period of silt levels on a completely cleaned street is 10 days. Some evidence exists to suggest that the return period is much shorter, which would diminish the emission reductions calculated for use of a certified sweeper versus an uncertified unit.

30. RETROFIT ON-ROAD DIESEL ENGINES WITH PARTICULATE FILTERS

Control Measure Description

A number of programs have been implemented involving the voluntary or mandatory retrofit of on-road heavy-duty Diesel trucks (HDDTs) with PM control devices. The measure involves the retrofit of 1,000 pre-2007 model year heavy-duty Diesel trucks (HDDTs) with Diesel PM filters (DPFs) and Diesel oxidation catalysts (DOCs). The table below shows the range of potential emission benefits associated with DPFs and DOCs that have been verified by the U.S. EPA and CARB as being capable of reducing Diesel PM emissions.

Technology	PM_{2.5} Reduction	VOC Reduction	CO Reduction
Diesel Particulate Filters	85-90%	50-90%	50-90%
Diesel Oxidation Catalysts	20-30%	50-90%	50-90%

Implementing Agency

This measure could be implemented by cities, towns, Maricopa County, and the Arizona Department of Transportation.

Costs

A summary of the cost for retrofits is shown in the following table. The cost for DPFs is estimated at \$11,875 per vehicle based on an average bus retrofit cost of \$7,500, which was scaled up to account for the higher horsepower rating of HDDT engines. The cost for DOCs is estimated to be \$2,375 per vehicle from average bus retrofit cost of \$1,500 (again scaled up for HDDTs). In addition to the cost of the retrofit devices, there are costs associated with fuel economy penalties due to the retrofit devices. These penalties arise from increases in exhaust system backpressure caused by installation of the devices. The estimated fuel economy penalties based on mid-range estimates published by the U.S. EPA for DPFs and DOCs are also shown in the following table.

Technology	Avg Retrofit Cost	Additional Costs
Diesel Particulate Filter (DPF)	\$11,875	~3% fuel economy penalty
Diesel Oxidation Catalyst (DOC)	\$2,375	~1% fuel economy penalty

Costs were amortized over a five-year useful life using a discount rate of 7%. Diesel fuel was assumed to cost \$2.50 per gallon, and average fuel economy and annual VMT of retrofit HDDTs were assumed to be 4.6 miles per gallon and 70,000 miles, respectively.

Benefits

The emission reductions associated with the retrofit of 1,000 pre-2007 model year HDDTs with either DPFs or DOCs were estimated. Average emission factors for pre-2007 HDDTs were developed from MOBILE6.2 using calendar year 2010. Annual average mileage was assumed to be 70,000 miles and it was assumed that retrofit vehicles were operated exclusively in the MAG region. The average control efficiency of DPFs and DOCs was assumed to be 85% and 25%, respectively, and estimated PM_{2.5} reductions were 0.083 and 0.024 tons per day.

Cost Effectiveness

Based on the emission reductions and cost estimates discussed above, the average cost-effectiveness ratios were estimated to be \$107,000 and 133,000 per ton of PM_{2.5} emissions eliminated for DOCs and DPFs, respectively.

Implementation Issues

Care must be taken to ensure that retrofit devices are used for verified/appropriate vehicle applications.

31. REPAVE OR OVERLAY PAVED ROADS WITH RUBBERIZED ASPHALT

The City of Phoenix originally pioneered the use of rubberized asphalt to recycle waste tires in 1964 when it was incorporated into a “chip seal” program for city streets. Improvements in durability were offset by concerns about potential vehicle damage from loose chips and the program was discontinued in 1989. At about the same time, both the city and the state began incorporating rubber from recycled waste tires into a hot asphalt mix that was used to resurface roads. Subsequent research has shown that rubberized asphalt has many additional benefits, including reduced tire noise, increased skid resistance, improved surface drainage and more recently reduced tire wear.

Tire wear is a component of PM₁₀ emitted from motor vehicles. Other components include vehicle exhaust, brake wear and re-suspended road dust. According to EPA’s mobile source emission factor model, MOBILE6, PM₁₀ from tire wear is emitted at a rate of 0.010 g/mi (for the mix of vehicles operating in the nonattainment area). Based on information presented in the Salt River PM₁₀ Emissions Inventory, emission factors for the other components are all higher, including:

- Fugitive Dust – 0.30 g/mi
- Exhaust – 0.065 g/mi
- Brake Wear – 0.013 g/mi

Information on reductions in tire wear emissions was obtained from an Arizona State University study that contrasted emissions from rubberized asphalt with portland cement concrete (PCC). The results of that study indicate that emission rates of tire wear on rubberized asphalt are 30-50% lower than they are on PCC. This is a comparison that represents the benefits of rubberized asphalt used as an overlay to extend the life of PCC freeways. No information was found to provide a similar comparison of benefits on arterial and local roads, which more typically use conventional asphalt.

Suggested Implementing Agency

This measure could be implemented by cities, towns, Maricopa County, and the Arizona Department of Transportation.

Cost

Information was requested on the marginal cost of resurfacing PCC with conventional asphalt or related maintenance procedures, but has not yet been received. According to ADOT, the average cost of laying rubberized asphalt is \$1.1 million per mile (6 lanes) or approximately \$183,333 per lane mile.

Emission Reduction

Assuming a freeway comparison with an average daily traffic (ADT) of 17,000 vehicles per lane mile, the emission reduction of using rubberized asphalt is estimated to be 0.034 tons

per mile per year. At a lower ADT level of 2,500 vehicles per lane mile, the emission reduction drops to 0.005 tons per mile per year.

Cost Effectiveness

The cost effectiveness of resurfacing freeways with rubberized asphalt is estimated to \$630,882/ton of PM₁₀ reduced. Assuming similar resurfacing costs, the cost effectiveness for roads with lower ADT levels would be \$4,290,000/ton of PM₁₀ reduced.

Implementation Issues/Comments

While the cost effectiveness of this measure may be improved with information on the marginal cost of resurfacing with rubberized asphalt (i.e., versus other methods), the cost effectiveness of this measure is moot. This is because the Regional Transportation Plan (RTP) includes commitments to fund mitigation projects which include rubberized asphalt overlays. Thus, this measure is already being implemented and credit for the emission reductions attributed to it should be credited toward the 5% per year emission reductions. Unfortunately, the emission benefits of this measure are limited due to the low emission rate of tire wear.

32. PAVE OR STABILIZE EXISTING UNPAVED PARKING LOTS

Unpaved parking areas contribute to the particulate pollution problem through two separate processes: (1) the production of fugitive dust as vehicles travel over an unpaved surface; and (2) trackout of material onto adjacent paved surfaces, including parking lots, driveways, and public roadways, where it is subsequently crushed by moving vehicles and re-entrained into the air by trailing vehicle wakes. Maricopa County has estimated that unpaved parking lots produced 3,009 tons or 3% of the PM₁₀ emitted annually within the nonattainment area in 2005. This estimate did not include any benefit for Rule 310.01; it assumes that emissions from unpaved parking lots are uncontrolled. While this may be an overestimate of the emissions, the recent analysis of Rule 310.01 effectiveness did not address unpaved parking lots (the focus instead was on vacant lots), so the level of enforcement in 2005 is unclear.

Currently Rule 310.01 requires the owner and/or operator of an unpaved lot to implement one of the following control methods:

- Pave;
- Apply dust suppressants; or
- Uniformly apply and maintain surface gravel.

The non-paving measures are subject to stabilization and opacity limitations; these limitations do not apply to paving. This measure would apply City of Phoenix zoning requirements for off-street parking to unpaved parking lots throughout the nonattainment area. All parking and maneuvering areas on residential, commercial and industrial property, with the exception of single-family homes or duplexes, would be required to have dustproof paving using one of the following options: asphaltic concrete, cement concrete,

chip seal, or an equivalent. Single-family homes or duplexes can comply by applying a smooth layer of crushed rock or equivalent surface treatment.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

Cost was separately evaluated for paving and dust palliative application for non-single family homes or duplexes. Each alternative was evaluated for a 0.10-acre parking lot, which is the maximum size exempt from treatment under Rule 310.01. The annualized cost of paving, since paving is assumed to last for 25 years, is \$1,699/year. The annualized cost of dust palliatives, assuming annual grading and palliative application, is \$101 per year. No additional effort or cost was assumed to implement this rule.

Emission Reduction

The paving option is estimated to produce a reduction of 94 lbs of PM_{10} per year. The palliative option is estimated to produce a reduction of 33 lbs of PM_{10} per year.

Cost Effectiveness

Paving is estimated to have a cost effectiveness of \$18.10/lb or \$36,204/ton of PM_{10} reduced; palliatives are estimated to have a cost effectiveness of \$3.06/lb or \$6,119/ton of PM_{10} removed.

Implementation Issues/Comments

This analysis needs to be updated to include enforcement costs, because considerable effort would be required to achieve a high level of rule effectiveness.

33. PAVE OR STABILIZE EXISTING DIRT ROADS AND ALLEYS

Fugitive dust emissions occur whenever a vehicle travels over an unpaved surface. Unlike paved roads, however, the road is the source of emissions rather than any surface dust loading. Although unpaved roads and alleys generally receive much lower traffic than paved facilities, their greater PM_{10} emission rate causes them to produce high levels of fugitive dust. Vehicles transitioning from unpaved to paved surfaces can also trackout material onto paved surfaces that can be re-entrained by subsequent traffic. Wind erosion of dust from unpaved surfaces can also add to the total fugitive dust emissions.

Maricopa County estimates that unpaved roads produce 8,490 tons or 9.3% of the PM_{10} emitted within the nonattainment area in 2005. This estimate assumes that all commitments to pave unpaved roads contained in the Serious Area

PM₁₀ Plan were implemented. No benefit from Rule 310.01 is included. This estimate assumes that emissions from unpaved roads are uncontrolled. While this may be an overestimate of the emissions, the recent analysis of Rule 310.01 effectiveness did not address unpaved roads (the focus instead was on vacant lots), so the level of enforcement in 2005 is unclear.

Currently, Rule 310.01 requires emissions from unpaved roads (including alleys) with traffic levels exceeding 150 vehicles per day to be controlled by one of the following methods:

- Pave;
- Apply dust suppressants; or
- Uniformly apply and maintain surface gravel.

The nonpaving measures are subject to stabilization and opacity limitations. These limitations are not applicable to unpaved roads that have been paved. This measure would extend Rule 301.01 requirements to unpaved roads with traffic levels below 150 vehicles per day.

Suggested Implementing Agency

This measure could be implemented by cities, towns, Maricopa County, and Arizona Department of Transportation.

Costs

No estimate of additional enforcement activity or cost is assumed to implement this measure. According to tests conducted in 1995 by MCDOT, the most cost effective palliative is Ligno 10, which has an annual cost of \$3,052/mile. The analysis assumes that four applications per year are required to provide sufficient control for high volume unpaved roads (i.e., 120 vehicles per day).

Emission Reduction

The MCDOT study computed a control efficiency of 67.3% compared to uncontrolled conditions when applied four times per year. This measure was assumed to be applied to the higher-traffic unpaved roads included in the 2005 Periodic Emission Inventory, which had traffic levels of 120 vehicles per day. This measure was estimated to produce a reduction in fugitive dust emissions of 21.7 tons per mile per year.

Cost Effectiveness

The overall cost effectiveness of this measure is estimated to be \$0.07/lb or \$141/ton.

Implementation Issues/Comments

Unlike Measure #5, no field effort is assumed to identify high-volume roadways for stabilization. Stabilizing roads will make it easier to drive faster and raise speed control and liability issues. Before this measure can be implemented, data on traffic volumes will have to be collected to identify candidate roads for stabilization.

34. LIMIT SPEEDS TO 15 MILES PER HOUR ON HIGH TRAFFIC DIRT ROADS

Dust emissions from unpaved road travel increase as vehicle speed increases. According to EPA's AP-42 emission factor for unpaved road travel, fugitive dust emissions increase by a factor of 1.41 (i.e., the square root of 2) when speed is doubled. The emission inventory developed by Maricopa County for 2005 assumes that vehicles traveled at an average speed of 25 mph on unpaved roads and produced 8,490 tons or 9.3% of the PM₁₀ emitted within the nonattainment area. At present, speeds on unpaved public roads are uncontrolled.

Regulated facilities are required to consider the impact of speed on fugitive dust emissions on unpaved roads. Rule 310 requires owners and/or operators of unpaved haul or access roads that have not been stabilized to limit vehicle speeds to no more than 15 miles per hour. This measure would extend those requirements to unpaved roads accessible to the public with traffic levels above 120 vehicles per day.

Discussions with MCDOT indicate that liability concerns moot the use of speed bumps to limit speeds and encourage the use of paved roads. Enforcement options therefore include installing signs posting speed limits at regular intervals (e.g., ¼ mile) and use of radar guns to measure speed of oncoming vehicles.

Suggested Implementing Agency

This measure could be implemented by cities, towns, Maricopa County, and Arizona Department of Transportation.

Cost

Costs were estimated for installing signs and enforcing speed limits on selected segments of high traffic (i.e., 120+ vehicles per day) unpaved county roads. The annualized signage cost assuming signs every ¼ mile with a useful life of 15 years is \$142/road mile per year. The annualized cost of enforcement assumes that a deputy sheriff with a radar gun monitors the selected unpaved roads and issues an estimated four tickets per day. The annualized enforcement cost is \$8,211/road mile per year.

Emission Reduction

The benefit of limiting speed from 25 mph to 15 mph on unpaved roads would be a 22.5% reduction in fugitive dust emissions. When applied to roads with more than 120 vehicles per day, this measure, which assumes an in-use compliance factor of 70%, would reduce

fugitive dust emissions by 9.29 tons/road mile per year.

Cost Effectiveness

The overall cost effectiveness of this measure is estimated to be \$0.45/lb, or \$899/ton of PM₁₀ reduced.

Implementation Issues/Comments

MCDOT has concluded from past experience that the changing conditions of unpaved roads makes proper and realistic posting of speed limits “near impossible.” This position is consistent with what the state and other counties are doing.

35. PROHIBIT NEW DIRT ROADS, INCLUDING THOSE ASSOCIATED WITH LOT SPLITS

Unpaved roads are a significant source of fugitive dust emissions in the nonattainment area. Maricopa County estimates that unpaved roads produce 8,490 tons or 9.3% of the PM₁₀ emitted within the nonattainment area in 2005. While controls are required for existing unpaved roads, there is no prohibition on the construction of new unpaved roads or the expansion of existing unpaved roads.

Clark County began prohibiting the construction of new unpaved roads or alleys in public thoroughfares in calendar year 2000 unless the unpaved road is an interim component of an active paving project. San Joaquin Valley started prohibiting the construction of new unpaved roads in urban areas in 2004. New unpaved roads cannot be constructed in urban areas unless the road is to be used for a temporary activity that does not exceed six months of use over a consecutive three-year period. Temporary activities are defined to include construction access roads, special events, or traffic detours. The surface of roads meeting this definition must be maintained in a stabilized condition at all times in order to control fugitive dust emissions.

Each year funds are allocated for paving and stabilizing the existing inventory of unpaved roads. The implementation of this measure will place a cap on the growth of unpaved roads and ensure that emissions from vehicles operating on them will diminish over time.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

The only option evaluated for this measure is paving. The annualized paving cost is estimated to \$44,067/mile per year. This estimate includes costs for roadway excavation, aggregate base, asphalt paving, striping, and traffic control.

Emission Reduction

The emission benefit is 33,308 lbs/mile per year, or 16.7 tons/mile per year of PM₁₀ reduced.

Cost Effectiveness

The cost effectiveness is estimated to be \$1.32/lb of PM₁₀ reduced, or \$2,646/ton.

Implementation Issues/Comments

The high capital outlay for paving may encourage developers to instead opt to stabilize new roads and pass the long-term cost of maintenance onto home owners, which would then require additional enforcement effort to assure compliance.

36. PAVE OR STABILIZE UNPAVED SHOULDERS

Direct and indirect emissions from vehicle travel on the untreated shoulders of paved roads are a significant source of PM₁₀ emissions in the Maricopa County nonattainment area. Direct emissions are generated when vehicles travel on unpaved shoulders and when trucks moving at moderate speeds produce bow wakes that entrain loose dust on shoulder surfaces into the air. Indirect emissions are generated when vehicles crossing from unpaved shoulders onto paved lanes track soil onto the pavement that is subsequently crushed by vehicle tires and entrained into the air by trailing vehicle wakes.

Maricopa County Department of Transportation (MCDOT) recently completed an evaluation of several unpaved road shoulder control measures. These measures were examined over a range of road classifications (i.e., local, collector, and arterial), and over a range of average daily traffic (ADT) levels. The analysis separately evaluated reductions to truck bow wake emissions and paved road re-entrained soil emissions from several applicable control measures, including dust palliative stabilization, gravel application, and paving.

The Serious Area PM₁₀ Plan included several measures to reduce paved road fugitive dust emissions, including, curbing, paving, and stabilizing unpaved shoulders on paved roads. Maricopa County included an estimate of the benefits of these measures in the 13,783 tons of PM₁₀ that paved roads emitted in the nonattainment area in 2005. The reduction attributed to these measures in paved road emissions was estimated to be 4%. This measure would make additional commitments, beyond those established in the Serious Area PM₁₀ Plan, to pave and stabilize the unpaved shoulders of additional miles of paved roads located within the nonattainment area.

Suggested Implementing Agency

This measure could be implemented by cities, towns, Maricopa County, and Arizona Department of Transportation.

Cost

The reader is referred to the above-referenced MCDOT report for information on the range of control measures assumed. Information here is limited to the most cost-effective measure presented in that analysis (measure 21b). The cost of 8-foot paved shoulders, with a useful life of 20 years, is \$25,104 per centerline mile year.

Emission Reduction

The selection of 8-foot paved shoulders is estimated to reduce fugitive dust emissions by 2,721 lbs per centerline mile year, or 1.36 tons per centerline mile year.

Cost Effectiveness

The overall cost effectiveness is \$9.23/lb of PM₁₀ reduced, or \$18,452/ton.

Implementation Issues/Comments

Research on bow wake emissions is limited and no study of control effectiveness for shoulder paving on bow wake emissions could be identified. Therefore, an estimate was prepared based on engineering judgment. Care should be exercised in relying on the benefits computed for this measure.

37. PAVE OR STABILIZE UNPAVED ACCESS TO PAVED ROADS

PM₁₀ emissions are produced indirectly by soil tracked out of construction or industrial sites onto paved, publicly maintained roads. Maricopa County estimates that paved roads produced 13,783 tons or 15% of the PM₁₀ emitted annually within the nonattainment area in 2005. Research supported by MAG has confirmed that trackout is a significant source of fugitive dust within the Salt River Basin and that its contribution to monitored values could be higher than suggested by the inventory estimates.

Currently, MCAQD Rule 310 requires trackout or spillage that exceeds 50 feet in length on public roads to be removed immediately. For visible trackout that is less than 50 feet in length, Rule 310 requires removal once per day at the end of working hours. To prevent trackout, owners are currently required to implement one of the following control measures:

- Install either a grizzly or wheel wash system at each access point;
- Install a gravel pad at least 30 feet wide, 50 feet long and 6 inches deep; or
- Pave from the point of access for a centerline distance of 100 feet and width of 20 feet.

Recent analysis of Rule 310 indicates that its effectiveness is on the order of 50% and suggests that there is an opportunity for improvement. This measure would make the trackout requirements of Rule 310 more restrictive by requiring the following:

- Reducing the length that requires rapid cleanup (i.e., 25 feet from any exit);
- Doubling the length of the gravel pad requirements (i.e., 100 ft); and
- Combining gravel pad and grizzly requirements (i.e., 50 ft gravel pad and 24 ft grizzly).

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

To simplify the calculations, it is also assumed that each facility has only one access point. Costs are presented below for each of the compliance options.

Rapid Cleanup	\$2,913 per access point/year
Doubled Gravel Pad	\$2,965 per access point/year
Gravel Pad & Grizzly	\$4,120 per access point/year

Emission Reduction

The benefit of the control options was estimated by first computing the amount of material that would be dropped by 40 heavy-duty trucks exiting a facility each day. The baseline estimate assumes that the access point is not currently being swept for any of the options.

The baseline for the Rapid Cleanup scenario also assumes that a 100-foot paved apron is in place. The control scenario assumes that the access point is swept every two hours during work hours. The benefit computed for this measure is estimated to be 215 lbs of PM₁₀ per access point per year.

The baseline of the Doubled Gravel Pad scenario assumes that the existing gravel pad is 50 feet long. The control scenario assumes that the pad is 100 feet long. The benefit computed for this measure is estimated to be 33 lbs of PM₁₀ per access point per year.

The baseline of the Gravel Pad & Grizzly scenario assumes that the existing gravel pad is 50 feet long. The control scenario assumes that the baseline gravel pad is combined with the 24-foot grizzly. The benefit computed for this measure is estimated to be 49 lbs of PM₁₀ per access point per year.

Cost Effectiveness

Rapid Cleanup	\$16.30/lb or \$32,593/ton per access point/year
Doubled Gravel Pad	\$89.57/lb or \$179,133/ton per access point/year
Gravel Pad & Grizzly	\$84.01/lb or \$168,025/ton per access point/year

Implementation Issues/Comments

The benefits of this measure are dependent on assumptions about the baseline compliance with Rule 310. This analysis assumed full compliance with Rule 310, which significantly deflates the amount of material that is tracked-out and inflates the cost effectiveness of the measure.

38. STRENGTHEN AND INCREASE ENFORCEMENT OF RULE 310.01 ON VACANT LOTS

There are over 4,000 vacant lots in the Maricopa PM₁₀ nonattainment area. To assure compliance with the requirements of Rule 310.01 on these lots will require an increase in the number of Maricopa County Air Quality Department (MCAQD) inspectors and increased trespass prevention actions by lot owners. To evaluate the cost effectiveness of this measure, we assumed that MCAQD would dedicate two inspectors solely to vacant lot inspections, and that owners of non-compliant lots would erect trespass barriers on these lots. We assumed that rock barriers, estimated to have the lowest installed cost for trespass prevention, would be the compliance method selected by more lot owners.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

Enforcement costs in this analysis include the salary and benefit costs of inspectors, and the costs of processing the Notices of Violation (NOVs) issued by inspectors. We assumed that each inspector would inspect 12 vacant lots per day and issue NOVs to the 32% that are estimated by the MCAQD 2007 rule effectiveness study to be out of compliance. On a per-vacant lot basis, these costs were estimated to total \$48.42 per lot per year. The average lot was estimated to be 3.0 acres in size, based on visual examination of a map of vacant lots in the Salt River area published in the Salt River PM₁₀ TSD. The cost of erecting a rock boulder barrier around a square lot of this size was estimated to cost \$11,400, from survey data also published in the TSD. A rock barrier was assumed to have a useful life of 20 years, which equated to an annualized capital cost of this construction of \$1,340 per year. The total cost of this measure was estimated to be \$1,390 per year per 3-acre vacant lot.

Emission Reduction

We assumed that the erection of a rock barrier would fully eliminate trespass emissions on a vacant lot. Since this cost effectiveness analysis is being conducted to evaluate control measures effective during winter, stagnant wind conditions, we did not evaluate windblown emissions from vacant lots which would also be reduced as a result of this measure. In the absence of any recorded data, we estimated that the average vacant lot received two trespass trips per week. This infrequent rate compares favorably with the absence of trespass activity observed by MCAQD inspectors on vacant lots. The

emissions from two weekly trips by light-duty vehicles were estimated to produce 11.6 pounds of PM₁₀ per year on a 3-acre vacant lot. Windblown emissions are estimated to be 75.8 pounds per year for this lot based on the assumption that the disturbed area is limited to a single 20-foot wide track across the parcel. By eliminating trespass trips, the emission reduction achieved by this measure would be 87.4 pounds of PM₁₀ per year per average vacant lot.

Cost Effectiveness

The cost effectiveness of this measure was calculated to be \$15.91 per pound, or \$31,814 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

This analysis used a very low vehicle trespass rate on vacant lots. If monitoring of trespass activities on vacant lots shows that trespass frequencies are higher, the emission reductions would be greater and the cost effectiveness would also improve.

39. RESTRICT VEHICULAR USE AND PARKING ON VACANT LOTS

This measure is very similar to Measure #38, Strengthen and Increase Enforcement of Rule 310.01 for Vacant Lots. Under this measure, costs are limited to those needed to restrict vehicular access to vacant lots. To evaluate the cost effectiveness of this measure, we assumed that the owner of a vacant would use the lowest cost method available to construct a barrier around a typical lot in order to completely prevent vehicle access. From analyses published in the Salt River PM₁₀ SIP prepared by the ADEQ, we assumed that the installation of a rock boulder barrier would be the least expensive method of securing a vacant lot.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The cost of installing a rock boulder barrier was estimated to cost \$7.90 per linear foot, based on a survey conducted by ADEQ in support of the Salt River SIP. For the purpose of this analysis, we assumed that the average vacant lot covered 3.0 acres. This value was estimated from evaluation of the vacant lot map for the Salt River area published in the Salt River SIP. We assumed that such a lot would be square, and thus have a perimeter of 1,446 linear feet. We estimated that the useful life of a rock boulder barrier would be 20 years, and calculated the annualized cost of this installation at a 3.0-acre square lot to be \$1,342 per year.

Emission Reduction

We assumed that the erection of a rock barrier would fully eliminate trespass emissions on a vacant lot. Since this cost effectiveness analysis is being conducted to evaluate control measures effective during winter, stagnant wind conditions, we did not evaluate windblown emissions from vacant lots which would also be reduced as a result of this measure. In the absence of any recorded data, we estimated that the average vacant lot received two trespass trips per week. This infrequent rate compares favorably with the absence of trespass activity observed by MCAQD inspectors on vacant lots. The emissions from two weekly trips by light-duty vehicles were estimated to produce 11.6 pounds of PM₁₀ per year on a 3-acre vacant lot. By eliminating trespass trips, the emission reduction achieved by this measure would be 11.6 pounds of PM₁₀ per year per average vacant lot. Windblown emissions are estimated to be 75.8 pounds per year for this lot based on the assumption that the disturbed area is limited to a single 20-foot wide track across the parcel. By eliminating trespass trips, the emission reduction achieved by this measure would be 87.4 pounds of PM₁₀ per year per average vacant lot.

Cost Effectiveness

The cost effectiveness of this measure was calculated to be \$15.35 per pound, or \$30,706 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

This analysis used a very low vehicle trespass frequency on vacant lots. If monitoring of trespass activities on vacant lots shows that trespass frequencies are higher, the emission reductions would be greater and the cost effectiveness of this measure would also improve.

40. ENHANCED ENFORCEMENT OF TRESPASS ORDINANCES AND CODES

Under this measure, trespass violations of Rule 310.01 would be reduced by increased enforcement of rule requirements. Interviews with law enforcement agencies indicated that enforcement would not be practical unless each vacant lot was posted with "no trespassing" signs. We also assumed that enforcement of the measure would not be effective unless law enforcement officers were specifically dedicated to patrolling and issuing tickets to trespass violators. As a result, we assumed that the cost elements of this measure would include the installation of signs on vacant parcels, and the assignment of law enforcement officers solely to enforcement of the trespass requirements of Rule 310.01.

Suggested Implementing Agency

This measure would be implemented by Maricopa County and the cities and towns within the PM₁₀ nonattainment area.

Cost

Information on the costs of sign installation and law enforcement costs were obtained from the Maricopa County Department of Transportation (MCDOT) and from the Salt River PM₁₀ SIP prepared by the ADEQ. We assumed that “no trespassing” signs would have to be installed every 200 feet along the boundary of a vacant lot in order to withstand legal challenges that trespassers were properly notified of applicable ordinances, and that the cost of sign installation would be \$200 per sign. To post the entire perimeter of an average 3-acre parcel, the total cost of sign installation would be \$1,456. We assumed that these signs would have a useful life of 15 years, and calculated the annualized cost of this installation to be \$191.43 per 3-acre lot. To enforce the “no trespassing” ban, we estimated that two Maricopa County Deputy Sheriffs, or equally compensated police officers, working as a team in one vehicle would be required. The annual cost of these resources was estimated in the Salt River PM₁₀ SIP to be \$126,945 per year. Distributed over the 4,000 vacant lots within the nonattainment area, this cost would equate to \$31.74 per vacant lot. The costs of processing infraction tickets issued by the officers were estimated to cost \$1.81 per vacant lot per year. Total costs of sign installation and rule enforcement were calculated from these estimates to be \$224.97 per vacant lot per year.

Emission Reduction

We assumed that the installation of signs and enforcement of a trespass prohibition with substantial fines would result in a 75% reduction in direct trespass emissions, not counting any reductions in windblown emissions of disturbed surfaces. Assuming that trespass rates are now on the order of two trips per week per vacant lot, this compliance level would result in estimated emission reductions on a 3-acre vacant lot of 8.72 pounds of PM₁₀ per year. Windblown emissions are estimated to be 75.8 pounds per year for this lot based on the assumption that the disturbed area is limited to a single 20-foot wide track across the parcel. Based on the rule effectiveness analysis of Rule 310.01, it is assumed that normal vacant lot inspections will achieve 68% control of windblown emissions. By reducing trespass trips and windblown emissions, the emission reduction achieved by this measure would be 56.52 pounds of PM₁₀ per year per average vacant lot.

Cost Effectiveness

The overall cost effectiveness of this measure was calculated to be \$3.98 per pound, or \$7,961 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

The number of law enforcement personnel needed to enforce the applicable requirements of Rule 310.01 at a 75% compliance level is uncertain. We have assumed in this analysis that the use of two officers in a single vehicle with the authority to issue tickets with substantial penalties would be sufficient to induce compliance if the prohibition and penalty is widely advertised. If a public information campaign is not mounted, then the compliance rate and emission reductions will be lower. This analysis used a very low vehicle trespass

frequency on vacant lots. If monitoring of trespass activities on vacant lots shows that trespass frequencies are higher, the emission reductions would be greater and the cost effectiveness of this measure would also improve.

41. VACANT LOTS STABILIZED BY COUNTY IF OWNERS DO NOT RESPOND, LIENS PUT ON PROPERTY IF NECESSARY

This measure is similar to Measure #38, Strengthen and Increase Enforcement of Rule 310.01 for Vacant Lots. Under this measure, the county would install a trespass barrier on any vacant lot when the owner failed to do so, and a lien would be placed against the property to ensure reimbursement to the county. For this analysis, we assumed that an average vacant lot covered 3.0 acres, as estimated from a map of vacant lots in the Salt River area as published in the Salt River PM₁₀ SIP prepared by the ADEQ. From this document, we also obtained a cost estimate for rock boulder barriers, which we concluded was the least expensive method of preventing vehicle trespass onto vacant lots.

Suggested Implementing Agency

This measure would be implemented by Maricopa County.

Cost

The cost of installing a rock boulder barrier was estimated to cost \$7.90 per linear foot, based on a survey conducted by ADEQ in support of the Salt River SIP. For the purpose of this analysis, we assumed that the average vacant lot covered 3.0 acres and, for the purpose of this analysis, was square with a perimeter of 1,446 linear feet. We estimated that the useful life of a rock boulder barrier would be 20 years, and calculated the annualized cost of this installation on a 3.0-acre square lot to be \$1,342 per year. We estimated the cost of recording a lien on a vacant lot to be \$177.62, based on county legal salaries and benefits, and that a lien would remain in place for an average of 10 years. The annualized cost of a lien was calculated to be \$28.91 per vacant lot per year. The total annual cost of this measure was estimated to be \$1,371 per vacant lot per year.

Emission Reduction

We assumed that the erection of a rock barrier would fully eliminate trespass emissions on a vacant lot. Since this cost effectiveness analysis is being conducted to evaluate control measures effective during winter, stagnant wind conditions, we did not evaluate windblown emissions from vacant lots which would also be reduced as a result of this measure. In the absence of any recorded data, we estimated that the average vacant lot received two trespass trips per week. This infrequent rate compares favorably with the absence of trespass activity observed by MCAQD inspectors on vacant lots. The emissions from two weekly trips by light-duty vehicles were estimated to produce 11.6 pounds of PM₁₀ per year on a 3.0-acre vacant lot. By eliminating trespass trips, the emission reductions achieved by this measure would be 11.6 pounds of PM₁₀ per year per average vacant lot. Windblown emissions are estimated to be 75.8 pounds per year for this lot based on the assumption that the disturbed area is limited to a single 20-foot wide

track across the parcel. By eliminating trespass trips, the emission reduction achieved by this measure would be 87.4 pounds of PM₁₀ per year per average vacant lot.

Cost Effectiveness

The cost effectiveness of this measure was calculated to be \$15.68 per pound, or \$31,367 per ton, of PM₁₀ reduced.

Implementation Issues/Concerns

This analysis used a very low vehicle trespass frequency on vacant lots. If monitoring of trespass activities on vacant lots shows that trespass frequencies are higher, the emission reductions would be greater and the cost effectiveness of this measure would also improve.

42. SCHEDULE IMPROVEMENTS ON PARALLEL STREETS TO RETAIN ALTERNATE ROUTE OPTIONS ALONG MAJOR NORTH/SOUTH AND EAST/WEST CORRIDORS

Road improvements typically add capacity to facilitate the efficient flow of traffic. Improvements can include enhancements in signalization and turning capacity, the addition of grade separation, transit turnouts and bike lanes and capacity increases. The addition of improvements along parallel streets provides routing flexibility in times of increased congestion so that speeds do not deteriorate. Fugitive dust on paved roads, tire wear and brake wear are not influenced by vehicle speed. Since this measure does not reduce travel it has no impact on any of those categories of emissions. Vehicle exhaust emissions are influenced by average speed. While speed has a significant impact on hydrocarbons, carbon monoxide and nitrogen oxide emissions, it has a limited impact on exhaust PM₁₀ emissions. Sulfate is the only component of exhaust PM₁₀ impacted by speed; it however, accounts for less than 10% of exhaust PM₁₀ emitted from motor vehicles.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

While no estimate of the cost of implementing this measure is available; it should be noted that infrastructure improvements are expensive.

Emission Reduction

Motor vehicles are estimated to have emitted a total of 1,041 tons of PM₁₀ in 2005 and account for 1% of the nonattainment inventory. While no estimate of the fraction of travel impacted by this measure is available, it is clear that the impact of this measure on the level of PM₁₀ emitted from motor vehicles will be a very small portion of the inventory.

Cost Effectiveness

No estimate of the cost effectiveness of this measure is available.

Implementation Issues/Comments

The potential benefit of this measure is extremely limited and the cost effectiveness per ton of PM₁₀ reduced would be very expensive. This measure also has the potential to induce travel which could eliminate any of the PM₁₀ reductions.

43. BUILD PARK AND RIDE LOTS EARLIER

According to EPA, park-and-ride facilities are an important element of all high-occupancy vehicle (HOV) programs. They serve as a collection point for individuals transferring to another vehicle containing at least one other person. Park-and-ride lots generally are designed to serve bus or rail transit, but also can be developed to facilitate carpooling, vanpooling, use of various types of shuttle services, and combinations of these high-occupancy vehicles. Park-and-ride facilities may be dedicated lots on public property or joint-use lots on privately owned property where the normal parking function is not oriented toward modal transfer, such as at shopping centers or churches. The size of park-and-ride facilities varies widely—from only a few spaces in sparsely populated or less heavily travelled corridors to lots of many hundreds of spaces serving major rapid transit lines.

Nearly all major metropolitan areas and many rural areas have implemented some form of park-and-ride program to provide support facilities for transit, congestion relief, or as staging areas for ridesharing. Often, these facilities are developed according to a plan based on predetermined implementation criteria which provides for a systematic program of investment and implementation, also addressing demand for service. On the other hand, some park-and-ride facilities are developed simply as a means of reducing ad hoc parking at particular locations where property may be available.

The 2006 Update of the Regional Transportation Plan (RTP) has allocated funds to construct park-and-ride facilities in fiscal years 2007 and 2008. This measure calls for constructing these facilities in earlier years.

Suggested Implementing Agency

This measure would be implemented by the Maricopa Association of Governments, Maricopa County and cities and towns.

Cost

According to the 2006 RTP Update funds in the amount of \$3 million have been allocated for fiscal year 2007 and for fiscal year 2008 for construction of park-and-ride facilities.

Emission Reduction

No estimate of the reduction in PM_{10} emissions for the proposed facilities is available. Park-and-ride facilities reduce travel by facilitating the use of transit and carpools. The reduction in travel produces a reduction in both exhaust and fugitive dust emissions. The benefits for this measure, however, would only accrue to the years in which the park-and-ride lots would not have been constructed (which according to the RTP would be years prior to 2007 and 2008). A review of the literature, however, shows that transit buses have PM_{10} drawbacks.

- Transit bus exhaust PM_{10} emissions are almost 100 times higher than PM_{10} emissions from light-duty vehicles (passenger cars and light-duty trucks). This estimate is based on a comparison of vehicle class emission estimates from EPA's mobile source emission factor model MOBILE6.2. The exhaust emissions increase could be diminished or offset through the use of lower sulfur fuel and/or particulate traps.
- An analysis of fugitive dust emissions from transit buses versus light-duty vehicles indicates that a typical bus when fully loaded (i.e., 100% ridership) will reduce PM_{10} emissions by 20% relative to an equivalent number of passenger car trips. The analysis also shows that if the bus ridership drops below 75%, car trips will produce lower levels of PM_{10} than a single bus trip. The problem is that transit buses are significantly heavier than cars and the weight term of the fugitive dust equation for paved roads increases in a nonlinear manner.

If carpools are used instead of transit buses at park-and-ride lots, reductions in both exhaust and fugitive dust emissions will be achieved.

Cost Effectiveness

While no specific estimate of the cost effectiveness of park-and-ride lots is available, the information presented above suggests that the reduction in PM_{10} emissions is likely to be quite limited and the cost effectiveness of that reduction will be extremely expensive.

Implementation Issues/Comments

Transit (including park-and-ride lots) is an extremely expensive form of pollution control. It has high fixed and operational expenses, and if they are fully allocated to reduce emissions, the cost effectiveness is expensive in terms of \$/ton reduced. Transit is typically used as an ozone and/or carbon monoxide (CO) control measure, not as a fugitive dust control measure.

44. COORDINATE PUBLIC TRANSIT SERVICES WITH PINAL COUNTY

Public transit is an important component of the regional transportation system. The 2006 Update of the Regional Transportation Plan (RTP) has allocated about 32% of regional

funding to transit related projects. As part of the RTP, a regional bus network is funded; including operating costs, to ensure that reliable service is available on a continuing basis. In addition, light rail corridors are to be constructed to provide a high-capacity backbone for the transit network. Other transit services are included to provide a full range of options, such as paratransit and rural transit service. In addition to the regionally funded elements, local bus services will be funded by individual jurisdictions to supplement regional services.

Discussions with Pinal County staff confirmed that the County has no transit service at this time. Maps presenting planned service improvements in the RTP contain footnotes stating that "Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG)." Valley Metro and ADOT provide support for the formation and maintenance of carpools in Pinal County.

Suggested Implementing Agency

This measure would be implemented by the Maricopa Association of Governments, Pinal County and CAAG.

Cost

No funds have been allocated for transit in Pinal County therefore it is not possible to determine a cost for the coordination proposed in this measure.

Emission Reduction

No estimate of the reduction in PM₁₀ emissions is available for this measure. As noted in the discussion of Measure #43, transit buses have PM₁₀ drawbacks.

- Transit bus exhaust PM₁₀ emissions are almost 100 times higher than PM₁₀ emissions from light-duty vehicles (passenger cars and light-duty trucks). This estimate is based on a comparison of vehicle class emission estimates from EPA's mobile source emission factor model MOBILE6.2. The exhaust emissions increase could be diminished or offset through the use of lower sulfur fuel and/or particulate traps.
- An analysis of fugitive dust emissions from transit buses versus light-duty vehicles indicates that a typical bus when fully loaded (i.e., 100% ridership) will reduce PM₁₀ emissions by 20% relative to an equivalent number of passenger car trips. The analysis also shows that if the bus ridership drops below 75%, car trips will produce lower levels of PM₁₀ than a single bus trip. The problem is that transit buses are significantly heavier than cars and the weight term of the fugitive dust equation for paved roads increases in a nonlinear manner.

Cost Effectiveness

The information presented above suggests that the reduction in PM₁₀ emissions associated with improved transit service is likely to be quite limited and the cost effectiveness of that reduction will be extremely expensive.

Implementation Issues/Comments

Transit (including park-and-ride lots) is an extremely expensive form of pollution control. It has high fixed and operational expenses, and if they are fully allocated to reduce emissions, the cost effectiveness is expensive in terms of \$/ton reduced. Transit is typically used as an ozone control measure, not as a fugitive dust control measure.

45. INCREASE FINES FOR OPEN BURNING

The Maricopa County regulates all open outdoor fires. The purpose of the program is to limit the emissions of air contaminants that are produced from open burning. Any burning of material outdoors (where a flue or chimney is not used) is generally prohibited unless it is one of the following exempt processes:

1. Domestic cooking for immediate human consumption.
2. Warmth for human beings.
3. Recreational purposes, where the burning material is clean, dry wood or charcoal.
4. Branding animals.
5. Orchard heaters for frost protection in farming or nurseries.
6. Disposal of dangerous materials.
7. Fire extinguisher training – limited to small fires in a small container, such as a wastebasket.
8. Testing potentially explosive or flammable products in accordance with the Department of Transportation or Defense guidelines.
9. Testing potentially explosive-containing products for commercial, military, and law enforcement uses.
10. Fire fighting training areas and training structures when the sole source of flame is a burner fueled by LP gas or natural gas.

The penalty for an unpermitted open burn is set in ARS 49-501 Unlawful Open Burning; Definition; Exceptions; Fine. Any violation is punishable by a fine not to exceed \$25. Discussions with Maricopa County inspectors and enforcement staff indicate that the amount of the fine is insufficient to deter the behavior of repeat offenders.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

No estimate of the cost of implementing this measure is available.

Emission Reduction

The 2005 PM₁₀ emission inventory estimates that open burning produces 11.5 tons/year of PM₁₀. This source category represents 0.013% of the inventory for the nonattainment area. This estimate, however, only accounts for emissions from permitted burns; no estimate of the emissions produced by unpermitted burns is included in the inventory. Discussions with Maricopa County indicate that they have no data on the frequency of occurrence of unpermitted open burns. A review of their complaint files indicates that the number of complaints is roughly double the number of permitted burns. Assuming the same amount of material is burned in unpermitted burns and the complaints quantify the extent of the activity, the level of PM₁₀ emitted is roughly 23 tons/year and accounts for a very small portion of the inventory.

Cost Effectiveness

No estimate of the cost effectiveness of this measure is available.

Implementation Issues/Comments

Despite the limited emissions benefit of this measure, it is important to note that open burning has been observed in the Salt River on days when the ambient standard has been exceeded. One was observed at the facility located next to the 43rd Avenue monitoring site. Discussions with Maricopa County staff indicate that some facilities in the Salt River area are repeat offenders and are undeterred by \$25 fines.

A statute change is required to implement this measure.

46. RESTRICT USE OF OUTDOOR FIREPLACES AND AMBIENCE FIREPLACES IN THE HOSPITALITY INDUSTRY

Wood burning in Maricopa County is governed by a mixture of ordinances and rules. The goal of this measure is to close loopholes within this regulatory structure that allow some wood burning activity to continue on high pollution advisory (HPA) days. ARS 9-500.16 requires cities and towns to adopt, implement and enforce ordinances that prohibit the installation or construction of a fireplace or wood burning stove after 1998 unless it meets clean burning standards (e.g., gas or electric log, EPA certification, etc.). The statute, however, allows flexibility for ordinances to provide exemptions for industrial equipment, cooking devices and outdoor fireplaces.

The Maricopa County Residential Woodburning Restriction Ordinance restricts residential wood burning in a non-approved device (which is generally pre-1998 stoves, etc.) when monitoring or forecasting indicates that carbon monoxide (CO) and/or particulate standards are likely to be exceeded between October 1st and February 29th. The rule applies to

woodburning devices that heat the interior of residences. Barbecue devices, fire pits or mesquite grills are specifically exempted.

Maricopa County Rule 318 sets standards for residential woodburning devices that may be exempted from the restrictions established in the Residential Woodburning Restriction Ordinance. Approved woodburning devices include EPA-certified stoves, pellet stoves, gas burning appliances and masonry heaters that meet EPA performance standards. The rule applies to all residences, defined to include single and multiple dwellings, motels, hotels, dormitories, etc. Woodstoves, woodheaters or conventional woodstoves are defined to not include a barbecue device, a cookstove, a boiler or a furnace. It is not clear whether it addresses outdoor fireplaces or pits. Ambience fireplaces in the hospitality industry do appear to be covered.

Suggested Implementing Agency

This measure would be implemented by Maricopa County, cities and towns.

Cost

No estimate of the cost of implementing this measure is available.

Emission Reduction

Emissions from outdoor fireplaces, pits and the hospitality industry are not included in the PM₁₀ inventory. Residential woodburning is estimated to produce 231.2 tons/year of PM₁₀ emissions in the nonattainment area and account for 0.25% of the inventory. The activities targeted by this measure are expected to represent a fraction of this category of emissions. Therefore, the emission reductions attributed to this measure will be small.

Cost Effectiveness

The Most Stringent Measure Analysis evaluated two relevant woodburning control measures. The cost effectiveness estimates for the measures are:

- Retrofit existing fireplaces and woodstoves – \$190,000/ton of PM₁₀ removed; and
- Curtailment of woodheating – \$132,000/ton of PM₁₀ removed.

Implementation Issues/Comments

Revisions to ARS 9-500.16 and Maricopa County Rules would be required to implement this rule. Current penalties imposed under the Maricopa County Residential Woodburning Restriction Ordinance are \$50 for the second violation and \$100 for the third and subsequent violations. It is unclear if these fines need to be revised to support the implementation of this measure.

CHAPTER FIVE

SUGGESTED LIST OF MEASURES

This Chapter discusses the development of the Suggested List of Measures to Reduce PM-10 Particulate Matter. Following the approval of the Suggested List of Measures by the MAG Regional Council, the measures are then considered for implementation by the appropriate entities within their respective authorities.

The extensive planning process that was used to develop this plan involved the thorough review of pertinent air quality information by the MAG Air Quality Technical Advisory Committee. The information included: requirements in the Clean Air Act; emission inventories which identify the sources of PM-10 emissions; air quality monitoring data; air quality modeling data; and descriptions and assumptions associated with the air quality control measures. The committee also reviewed extensive information on the cost effectiveness of the air quality control measures.

Following the consideration of the various types of information, the MAG Air Quality Technical Advisory Committee began their deliberations to recommend a Suggested List of Measures to Reduce PM-10 Particulate Matter. Ultimately, the MAG Regional Council approved the Suggested List of Measures on March 28, 2007 and then included thirteen additional measures on the list on May 23, 2007. The measure selection process is depicted in Figure 5-1 and described below.

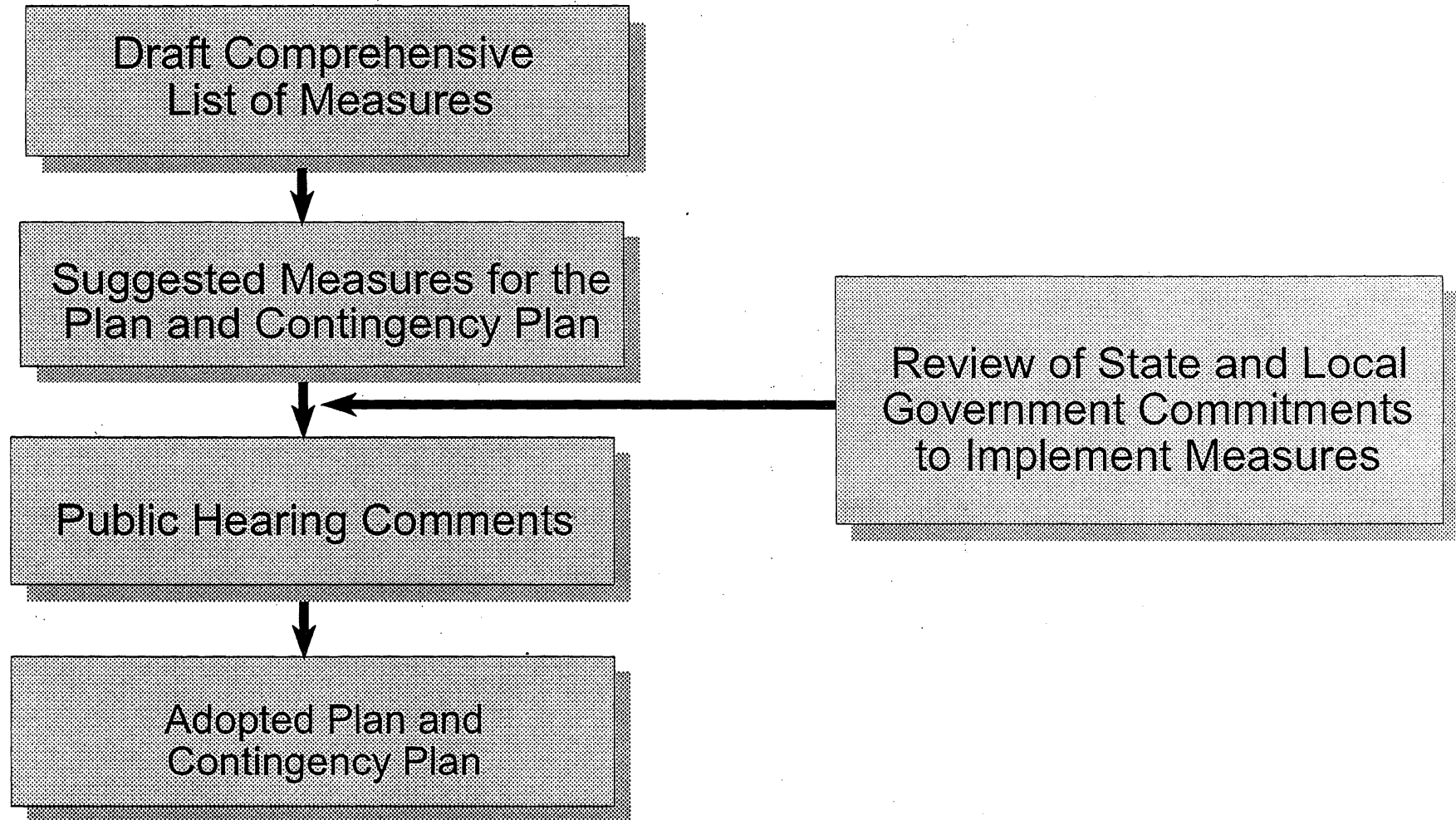
MAG AIR QUALITY TECHNICAL ADVISORY COMMITTEE RECOMMENDATION FOR THE SUGGESTED LIST OF MEASURES

In order to attain the PM-10 standard by the Serious Area deadline of December 31, 2006 for the Maricopa County nonattainment area, the region needed three years of clean data at the monitors for 2004, 2005, and 2006. However, there were numerous exceedances of the standard in November and December 2005. It then became evident that it would be necessary to prepare a plan to reduce PM-10 emissions by five percent per year until the standard is met, as required in the Clean Air Act Section 189 (d). The plan was required to be submitted to the Environmental Protection Agency by December 31, 2007.

The regional air quality planning process was then initiated to prepare a Five Percent Plan for PM-10. In January 2006 through March 2007, the MAG Air Quality Technical Advisory Committee reviewed an extensive body of information related to the development of the plan. The information included the: Clean Air Act requirements for the Five Percent Plan; air quality monitoring data; Preliminary Draft 2005 Periodic Emissions Inventory for PM-10 for the Maricopa County Nonattainment Area; Preliminary Draft Projected Emissions for 2007, 2008, and 2009; modeling approach for the Five Percent Plan for PM-10, Preliminary Results From the PM-10 Source Attribution and Deposition Study; Analysis of Particulate

Figure 5-1

MEASURE SELECTION PROCESS FOR MAG AIR QUALITY PLANS



Control Measure Cost Effectiveness report; Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter; and the estimated impacts of the measures for reducing PM-10 emissions, modeling attainment, and attaining the standard at all monitors in the nonattainment area. In addition, MAG also conducted a workshop on the Preliminary Draft Comprehensive List of Measures and Preliminary Results of the PM-10 Source Attribution and Deposition Study on February 16, 2007. Suggestions for control measures and other pertinent information were also reviewed throughout the process.

On March 1, 2007, the MAG Air Quality Technical Advisory Committee embarked upon a three day process to thoroughly discuss the measures and recommend a Suggested List. The Committee reviewed the entire Preliminary Draft Comprehensive List of Measures (dated February 27, 2007) which included approximately forty-six control measures. They also reviewed an additional twenty-eight measures which had been submitted in late February from the Arizona Department of Environmental Quality, Homebuilders, and Industry representatives. Recommendations from the Preliminary Results of the MAG PM-10 Source Attribution and Deposition Study were also included. Collectively, seventy-four measures were reviewed at meetings conducted on March 1, March 6, and March 9, 2007. The measures are contained in Appendix B, Exhibit 3.

During their deliberations, the MAG Air Quality Technical Advisory Committee also noted that there were duplications within the list of measures. In some cases, similar measures were combined with one another. In addition, the Committee provided their justification for not recommending some of the measures (see Appendix B, Exhibit 3).

As a result of the three day process, on March 9, 2007, the MAG Air Quality Technical Advisory Committee recommended a total of forty-one measures for the Suggested List of Measures to Reduce PM-10 Particulate Matter to the MAG Management Committee. On March 14, 2007, the MAG Management Committee made a recommendation of approval to the MAG Regional Council.

MAG REGIONAL COUNCIL APPROVAL OF THE SUGGESTED LIST OF MEASURES

On March 28, 2007, Maricopa County presented a memorandum at the MAG Regional Council meeting recommending additional PM-10 measures for the Suggested List and identifying some concerns. At the meeting, the MAG Regional Council took action to approve the Suggested List of Measures to Reduce PM-10 Particulate Matter as recommended by the MAG Air Quality Technical Advisory Committee and the MAG Management Committee with one modification and one addition. The Regional Council then directed the Air Quality Technical Advisory Committee at their April meeting to consider the remainder of the recommendations.

On April 26, 2007, the MAG Air Quality Technical Advisory Committee reviewed the remainder of the memorandum and recommended that Measure #3 Reduce the tolerance of trackout to 25 feet before immediate clean up is required for construction sites and Measure #4 No visible emissions at the property line, be sent back to the MAG consultant

to provide additional information. The Committee also recommended that Measure #2 Just-in-time grading limitations for construction and Measure #5 Modeling cumulative impacts for permitted sources because of the effects of multiple sources locating in close proximity to each other, not be considered further.

Also, in an April 20, 2007 letter, the Environmental Protection Agency expressed concern about the development of the new PM-10 Plan and the violations of the PM-10 standard occurring outside the Phoenix nonattainment area. Regarding the PM-10 Plan, EPA indicated that the responsibility for plan implementation relies too heavily on Maricopa County and not enough on local cities and towns, especially in the area of unpermitted sources (unpaved roads and driveways, unpaved parking lots, and disturbed vacant lots). If the entities responsible for implementing the control measures do not have adequate resources at the outset of the plan's implementation, EPA may not be able to approve the plan.

EPA indicated that control measures are being eliminated too early in the PM-10 planning process, without thorough consideration of the technical information. The process should be revisited given that Maricopa County and Arizona Department of Environmental Quality have suggested that some of the eliminated measures be reconsidered. Exceedances at the Buckeye monitor and Pinal County monitors need to be reduced or EPA may expand the Maricopa nonattainment area and designate the western portion of Pinal County as a nonattainment area.

On May 9, 2007, the MAG Management Committee reviewed the recommendations from the Air Quality Technical Advisory Committee, EPA letter, sanctions which could be imposed if the Five Percent Plan for PM-10 is not approvable by EPA, and the need for aggressive steps to deal with PM-10 pollution to protect public health. The Management Committee then recommended the four remaining measures from the County memorandum along with nine additional MAG measures and recommendations. On May 14, 2007, the MAG Regional Council Executive Committee recommended the Management Committee recommendation to the Regional Council.

On May 23, 2007, the MAG Regional Council approved thirteen additional measures for the Suggested List of Measures to Reduce PM-10 Particulate Matter, with the understanding that the actions would receive further refinement and input in the implementation process. The Suggested List of Measures, with the thirteen additional measures included, is provided in Table 5-1.

THE NEXT STEP IN THE PROCESS

After the Suggested List of Measures to Reduce PM-10 Particulate Matter was approved by the MAG Regional Council, the next step in the planning process involved the consideration of the measures by the appropriate implementing entities. Commitments to implement measures primarily from the State and local governments are then reviewed to determine which measures received firm commitments for inclusion in the Adopted Plan.

TABLE 5-1
SUGGESTED LIST OF MEASURES
TO REDUCE PM-10 PARTICULATE MATTER

These measures may or may not be feasible
and available to the implementing entities

MEASURE	POTENTIAL IMPLEMENTING ENTITY
Fugitive Dust Control Rules	
1. Public education and outreach (e.g., Clark County) with assistance from local governments - This measure would involve publicity campaigns (e.g., Bring Back Blue) that increase public awareness of the PM-10 problem and discourage citizens from participating in activities that generate airborne dust.	County, local governments
2. Extensive Dust Control Training Program (e.g., Clark County) - This measure would involve conducting more frequent dust control training classes and implementing a formal certification program. The County would provide advanced training to representatives of trade associations to qualify them to conduct classes and issue certifications. The County video on dust control rules and practices will be updated and distributed to public agencies and private companies for use in training their employees.	County, private sector
3. Dust Managers required at construction sites of 50 acres and greater (e.g., Clark County) - This measure would require a dust manager to be present on construction sites where 50 or more acres of soil are disturbed.	County
4. Dedicated enforcement coordinator for unpaved roads, unpaved parking, and vacant lots (e.g., Clark County) - This measure would require that additional resources be dedicated to strengthen enforcement of Rule 310.01 for unpaved roads, unpaved parking lots, and vacant disturbed lots.	County
5. Establish a certification program for Dust Free Developments to serve as an industry standard - This measure would create a program to certify and publicize companies that routinely demonstrate exceptional efforts to reduce airborne dust.	State, County
6. Better defined tarping requirements in Rule 310 to include enclosure of the bed - This measure would modify Rule 310 to require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.	County

Source: Maricopa Association of Governments. May 23, 2007.

MEASURE	POTENTIAL IMPLEMENTING ENTITY
7. Conduct mobile monitoring to measure PM-10 and issue NOVs - This measure involves deployment of a vehicle that has been instrumented to monitor PM-10 and meteorological conditions, so that sources can be identified, and immediate remediation and/or enforcement actions taken.	County
8. Conduct nighttime and weekend consistent inspections - This measure would involve proactive consistent inspections of nonpermitted and permitted PM-10 sources during non-daylight hours and on weekends.	County
9. Increase consistent inspection frequency for permitted facilities - This measure would increase the number of proactive consistent inspections conducted at permitted facilities.	County
10. Increase number of proactive consistent inspections in areas of highest PM-10 emissions densities - intensify training and education - incentive program for compliance - This measure would focus on the areas of highest PM-10 emissions density by increasing the number of inspectors and proactive consistent inspections, conducting on-site training, offering incentives to reduce PM-10, and performing community outreach.	County
11. Notify violators more rapidly to promote immediate compliance - This measure would require inspectors that observe visible dust (e.g., opacity or trackout levels that are approaching rule limits) to call the permit holder and make reasonable efforts to inform a person on-site, so that measures can be taken to prevent, reduce, or mitigate dust generation before a violation occurs.	County
12. Provide timely notification regarding high pollution days - This measure would provide timely notification to permitted and nonpermitted sources when a High Pollution Advisory or High Pollution Watch is issued by ADEQ.	County
13. Develop a program for subcontractors - This measure would develop a program to register, educate, and give notices of violation (NOVs) to subcontractors through Rule 310. This program would not preclude the issuance of NOVs to the permit holder.	County
14. Reduce dragout and trackout emissions from nonpermitted sources - This measure would add dragout provisions to Rules 310 and 310.01 and enforce dragout and trackout provisions for nonpermitted sources. For example, trackout from salvage yards would be enforced by the County.	County

MEASURE	POTENTIAL IMPLEMENTING ENTITY
15. Cover loads/haul trucks in Apache Junction - This measure would require loaded and empty haul trucks to be covered in the City of Apache Junction.	City of Apache Junction
16. Require dust coordinators at earthmoving sites of 5-50 acres - This measure would require an onsite dust control coordinator to be present on sites of 5 to 50 acres during active soil and rock excavation, soil and rock removal, and construction operations, including road construction operations, and related transport activities at access points to paved or unpaved roads. This person could also perform other tasks, but would be responsible for managing dust prevention and control on the site.	County
General	
17. Create a dedicated funding source for the Maricopa County Air Program - This measure would create a dedicated funding source for the County Air Program to support increased enforcement of Rule 310.01, and other air programs, as necessary. Example: Restore In-Lieu funding or some other fee to emissions testing, or other approach.	State, County
Industry	
18. Fully implement Rule 316 - This measure would enforce the provisions of Rule 316, adopted by Maricopa County in June 2005, for nonmetallic mineral processing sources of PM-10.	County, private sector
19. Require private companies to use PM-10 certified street sweepers on paved areas including parking lots (e.g., Clark County) - This measure will require paved surfaces (e.g., parking lots) owned by private companies to be swept using PM-10 certified street sweepers.	State, private sector
20. Provide incentives to shift hours of operation during stagnant conditions in November through February - This measure would provide incentives to postpone activities that generate dust until after 9 a.m. on days between November 1 and February 15 when ADEQ issues a High Pollution Advisory (HPA) under stagnant conditions.	State
Nonroad Activities	
21. Ban or discourage use of leaf blowers on high pollution advisory days - This measure would restrict or prohibit the use of leaf blowers on days when ADEQ issues a High Pollution Advisory (HPA).	State, County
22. Reduce off-road vehicle use in areas with high off-road vehicle activity (e.g., Goodyear Ordinance) - impoundment or confiscation of vehicles for repeat violations - This measure would involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area.	State, County, local governments

MEASURE	POTENTIAL IMPLEMENTING ENTITY
23. Create a fund to provide incentives to retrofit nonroad diesel engines and encourage early replacements with advanced technologies - This measure would establish funding to offer incentives for owners of older nonroad diesel equipment to retrofit or repower existing engines or replace with newer, less-polluting technology.	State
24. Encourage early implementation of clean fuels for nonroad equipment. - This measure would provide incentives for nonroad equipment to be retrofitted with diesel retrofit kits, newer clean diesel technologies and fuels; or “green diesel” biodiesel fuel, or other fuels that are cleaner than petroleum diesel.	State
25. Ban leaf blowers from blowing debris into streets - This measure would ban leaf blowers from blowing debris into the streets in Maricopa County.	State, County
26. Implement a leaf blower outreach program - This measure would involve the development and distribution of educational materials on reducing leaf blower dust and would require the private sector to provide the printed materials to customers who purchase or rent leaf blowers.	County, private sector
27. Regulate and increase enforcement of ATV use on State land - This measure would require the State to regulate and increase enforcement of all-terrain and off-highway vehicle use on State lands located in Area A.	State
28. Ban ATV use on high pollution days - This measure would ban ATV use on High Pollution Advisory days in Area A.	State
Paved Roads	
29. Sweep streets with PM-10 certified street sweepers - This measure would require all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 certified sweepers.	County, local governments
30. Retrofit onroad diesel engines with particulate filters - This measure would establish a program with financial incentives to encourage the voluntary retrofit pre-2007 onroad diesel vehicles with particulate filters and oxidation catalysts.	State, County
Unpaved Parking Lots	
31. Pave or stabilize existing unpaved parking lots (e.g., upgrade to Phoenix Parking Code) - strengthen enforcement - This measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas.	County, local governments

MEASURE		POTENTIAL IMPLEMENTING ENTITY
Unpaved Roads		
32.	Pave or stabilize existing public dirt roads and alleys - This measure would revise Rule 310.01 to require paving or stabilizing of public dirt roads that carry less than 150 vehicles per day (e.g., more than 50 vehicles per day).	County, local governments
33.	Limit speeds to 15 miles per hour on high traffic dirt roads - This measure would require 15 mph speed limit signs to be posted on dirt roads in the PM-10 nonattainment area that carry high traffic (e.g., 50-150 vehicles per day).	County, local governments
34.	Prohibit new dirt roads including those associated with lot splits - This measure would prevent the construction of new dirt roads (e.g., prohibit wildcat subdivisions; require paving of roads before issuing a building permit) in the PM-10 nonattainment area.	State, County
Unpaved Shoulders		
35.	Pave or stabilize unpaved shoulders - This measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (e.g., more than 2,000 vehicles or 50 heavy duty trucks per average weekday).	County, local governments
Unpaved Surfaces		
36.	Create a fund for paving and stabilizing in high pollution areas - This measure would create a particulate mitigation fund to pave and stabilize land surfaces in and around high pollution areas - Establish a grant program for private businesses to stabilize and pave - Direct fine monies from Maricopa County for stabilization efforts.	State, County, private sector
Vacant Lots		
37.	Strengthen and increase enforcement of Rule 310.01 for vacant lots - This measure would increase the frequency of inspections and enforcement actions to reduce dust emitted by vacant lots.	County
38.	Restrict vehicular use and parking on vacant lots (e.g., Phoenix) - This measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant land.	State ¹ , County, local governments
39.	Enhanced enforcement of trespass ordinances and codes - This measure would increase the enforcement of vehicle trespass ordinances and codes for vacant lots.	County, local governments

¹State was added by the Regional Council on March 28, 2007.

MEASURE	POTENTIAL IMPLEMENTING ENTITY
40. Ability to assess liens on parcels to cover the costs of stabilizing them² - This measure would give the County the authority to provide that the costs of stabilizing the disturbed areas on any vacant lot be assessed upon the property to which the stabilization was applied.	State, County
Woodburning	
41. Increase fines for open burning (currently \$25) - This measure would increase the maximum fine for open burning in ARS Title 49-501 from \$25 per occurrence to a level that would serve as a deterrent (e.g., \$500 per occurrence).	State, County
42. Restrict use of outdoor fireplaces and pits and ambience fireplaces in the hospitality industry - This measure would prohibit burning in outdoor fireplaces, outdoor pits, and ambience fireplaces in the hospitality industry, and ban other nonessential wood fires on days during the period November 1 - February 15 when ADEQ issues a High Pollution Advisory (HPA).	State, County
Additional PM-10 Measures Approved by the MAG Regional Council on May 23, 2007, with the understanding that the actions would receive further refinement and input in the implementation process	
43. Require barriers in addition to Rule 310 stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.	County
44. Reduce the tolerance of trackout to 25 feet before immediate cleanup is required for construction sites be placed in Maricopa County Rule 310.	County
45. No visible emissions across the property line be placed in Maricopa County Rule 310 and 310.01, and in local ordinances for nonpermitted sources as appropriate.	County, local governments
46. Modeling cumulative impacts - This measure would need further definition by Maricopa County and the Arizona Department of Environmental Quality and be subject to input to ensure that unintended consequences for temporary uses are not created.	State, County
47. MAG member agencies reexamine existing ordinances to ensure that nonpermitted sources, such as unpaved parking, unpaved staging areas, unpaved roads, unpaved shoulders, vacant lots and open areas, receive priority attention.	Local governments

²This measure was added by the MAG Regional Council on March 28, 2007.

MEASURE	POTENTIAL IMPLEMENTING ENTITY
48. Forward to the Governor's Agricultural Best Management Practices Committee that cessation of tilling be required on high wind days and that agricultural best management practices be required in existing Area A.	State
49. The Arizona State Legislature provide funding to the Arizona Department of Environmental Quality for four agriculture dust compliance officers for a total of five inspectors.	State
50. Support Maricopa County in receiving statutory authority to prohibit new dirt roads including those associated with lot splits. At a minimum, this would be within the Maricopa County PM-10 Nonattainment Area.	State, County
51. Each year the Maricopa Association of Governments conduct an inventory of dirt roads and estimated traffic counts by jurisdiction to measure progress in eliminating dirt roads. Also each year, MAG would issue a report on the status of the implementation of the committed measures for this region by the cities, towns, Maricopa County and the State. The reports would be made available to the Governor's Office, Legislature, the Arizona Department of Environmental Quality and the Environmental Protection Agency.	MAG, State, County, local governments
52. MAG allocate \$5 million in FY 2007 MAG federal funds matched on a 50/50 basis by MAG member agencies for paving dirt roads and shoulders projects and that these projects be immediately submitted to MAG for consideration at the July meetings of the MAG Management Committee and Regional Council for an amendment to the Transportation Improvement Program. These funds would be on a nonsupplanting basis for new projects.	MAG, County, local governments
53. The Arizona State Legislature provide funding to this region for paving dirt roads and shoulders and provide a funding source to local governments for the enforcement of nonpermitted sources, such as unpaved parking, unpaved vehicle staging areas, unpaved roads, unpaved shoulders, vacant lots and open areas. Also to provide funding to Maricopa County for additional inspectors for the enforcement of Maricopa County Rule 310.	State, County, local governments
54. Maricopa County Rules 310 and 316 be amended to provide that larger construction and mineral production facilities in excess of 50 acres be required to install two or more PM-10 samplers certified by the County. These samplers will be operated simultaneously for five consecutive hours during operating hours for the site or facility. These samplers will not meet EPA approved methods for ambient air quality monitoring.	County

MEASURE	POTENTIAL IMPLEMENTING ENTITY
55. Maricopa County should increase consistent enforcement in the areas where PM-10 violations continue to occur, along with efforts throughout the region. When an area continually experiences higher PM-10 concentrations than other areas, increased enforcement in areas experiencing high monitor readings is needed to protect public health.	County

Special Notes:

1. Further refinement of these measures may be made as additional information becomes available through the planning process. During the summer of 2007, the Maricopa Association of Governments will use the Maricopa County 2005 Periodic Emissions Inventory, finalized in May 2007, as well as commitments for measures received from the implementing entities, to quantify emission reductions and conduct air quality modeling for the Five Percent Plan.
2. The Governor's Agricultural Best Management Practices Committee is in the process of evaluating potential measures to further reduce PM-10 emissions from agriculture for consideration for the Five Percent Plan for PM-10. This Committee was established by law in 1998 (Arizona Revised Statutes, Title 49-457) to develop an agricultural PM-10 general permit that would address the need for controls on agricultural operations. The potential agricultural measures will be presented to the MAG Air Quality Technical Advisory Committee for consideration.

CHAPTER SIX

THE ADOPTED PLAN AND IMPLEMENTATION SCHEDULE FOR THE MAG 2007 FIVE PERCENT PLAN FOR PM-10

This Chapter discusses the Adopted Plan and Implementation Schedule. During the process of developing this plan, the State and local governments reviewed the measures from the Suggested List of Measures to Reduce PM-10 Particulate Matter which were under their respective authorities. Each entity then determined which measures were technologically and economically feasible for implementation by that entity.

Formal resolutions with commitments to implement PM-10 particulate pollution control measures were received from the Arizona Department of Transportation, Maricopa County, and the local governments in the PM-10 nonattainment area. The resolutions noted that the Five Percent Plan for PM-10 is required by the Clean Air Act to reduce PM-10 emissions by five percent per year until the standard is met.

These resolutions were reviewed in order to determine which measures received firm commitments for inclusion in the MAG Five Percent Plan for PM-10. According to the Arizona Department of Environmental Quality (ADEQ), the criteria for a firm commitment include: measures with the implementation, funding and time frame specified; ongoing programs; commitments to implement measures without a specific funding source identified; commitments to draft documents; and commitments to conduct feasibility studies. Jurisdictional support for a measure is not a firm commitment unless the jurisdiction also agrees to enforce the measure. Measures were also analyzed by MAG to determine which measures could be used for numeric credit towards the five percent reduction in emissions and the attainment demonstration (see Chapters Seven and Eight).

At the state level, the Arizona Legislature passed Senate Bill 1552 in 2007 which included several air quality measures designed to reduce PM-10. Since legislation constitutes a firm commitment, these measures were also included in the adopted plan.

Collectively, a broad range of commitments were received from the State, Maricopa County and local governments in the PM-10 nonattainment area for the adopted plan. These extensive commitments demonstrate the level of effort that is being made to improve air quality. Several of these measures were quantified to reflect their impact in reducing PM-10 emissions and attaining the standard as expeditiously as practicable.

However, in some cases, specific emissions reduction credits were not taken for measures where the basis of estimating air quality benefits was limited. It is important to note that the commitments not quantified will produce emission reductions above and beyond what has been quantified in the evaluation. These measures represent additional efforts by the State and local jurisdictions to reduce emissions and improve air quality. It is anticipated that as additional experience is gained in the implementation of these measures over time, a more detailed assessment of their air quality benefits may be developed and reported.

The resolutions from the respective entities and the State legislation are included in Chapter Ten and the corresponding commitment documents which accompany this plan.

The effective implementation, compliance and enforcement of the measures in the adopted plan are critical for air quality improvement and attaining the standard as expeditiously as practicable. According to Section 189 (d) of the Clean Air Act, the plan is required to demonstrate at least a five percent reduction in PM-10 emissions per year until the standard is met. Effective and timely implementation enhances the achievement of the standard as expeditiously as practicable and the continued maintenance of that standard.

COMMITTED MEASURES AND IMPLEMENTATION SCHEDULES

Based upon the commitments made by the State, Maricopa County and local jurisdictions, the following describes the measures in the adopted plan and their schedule for implementation. Part I includes commitments to implement Measures Related to the Suggested List. The actual commitments to implement measures may vary somewhat from the measures on the list, but are generally in keeping with the overall concepts embodied in the measures. Part 2 includes Additional Commitments for Measures Not on the Suggested List (see Table 6-1). The year in which the commitment was made is reflected in the left margin.

The measures in Senate Bill 1552 apply to different geographic boundaries such as the PM-10 nonattainment area, Maricopa County, and Area A. A map is provided in Figure 6-1.

PART 1: MEASURES RELATED TO THE SUGGESTED LIST

1. Public education and outreach with assistance from local governments

2007 ■ City of Apache Junction will implement a publicity campaign that will increase public awareness of the PM-10 problem and discourage citizens from participating in activities that generate airborne dust. The campaign will include: A. Gathering and providing educational materials to the public at City buildings. B. Making educational materials available to the public at scheduled neighborhood meetings. C. Disseminating air quality educational material and links on the City website. This measure will be implemented by the City of Apache Junction Public Works and Management Services Department. Legal authority for this action is provided under A.R.S. Section 9-240 (B). The implementation schedule is:

1. August 1, 2007- Gathering of educational materials completed.
2. September 1, 2007- Making air quality educational materials and links available on City website.

TABLE 6-1

FIVE PERCENT PLAN FOR PM-10 COMMITTED MEASURES

PART 1: MEASURES RELATED TO THE SUGGESTED LIST

1.	Public education and outreach with assistance from local governments.....	6-2
2.	Extensive Dust Control Training Program.....	6-20
3.	Dust Managers required at construction sites of 50 acres and greater.....	6-24
4.	Dedicated enforcement coordinator for unpaved roads, unpaved parking, and vacant lots.....	6-27
5.	Establish a certification program for Dust-Free Development to serve as an industry standard.	6-29
6.	Better defined tarping requirements in Rule 310 to include enclosure of the bed	6-30
7.	Conduct mobile monitoring to measure PM-10 and issue NOVs.....	6-32
8.	Conduct nighttime and weekend consistent inspections.....	6-33
9.	Increase consistent inspection frequency for permitted sources.....	6-34
10.	Increase number of proactive consistent inspections in areas of highest PM-10 emissions densities.....	6-37
11.	Notify violators more rapidly to promote immediate compliance.....	6-40
12.	Provide timely notification regarding high pollution days.....	6-41
13.	Develop a program for subcontractors.....	6-42
14.	Reduce dragout and trackout emissions from nonpermitted sources.....	6-44
15.	Cover loads/haul trucks in Apache Junction.....	6-45
16.	Require dust coordinator at earthmoving sites of 5-50 acres.....	6-46
17.	Fully implement Rule 316.....	6-49
18.	Ban or discourage use of leaf blowers on high pollution advisory days.....	6-50
19.	Reduce off-road vehicle use in areas with high off-road vehicle activity impoundment or confiscation of vehicles for repeat violations.....	6-53
20.	Provide incentives to retrofit nonroad diesel engines and encourage early replacements with advance technologies.....	6-67
21.	Ban leaf blowers from blowing debris into streets.....	6-69
22.	Implement a leaf blower outreach program.....	6-70
23.	Ban ATV use on high pollution days.....	6-71
24.	Sweep street with PM-10 certified street sweepers.....	6-72
25.	Pave or stabilize existing unpaved parking lots.....	6-86
26.	Pave or stabilize existing public dirt roads and alleys.....	6-103
27.	Limit speeds to 15 miles per hour on high traffic dirt roads.....	6-119
28.	Pave or stabilize unpaved shoulders.....	6-124
29.	Create a fund for paving and stabilizing in high pollution areas.....	6-138
30.	Strengthen and increase enforcement of 310.01 for vacant lots.....	6-139
31.	Restrict vehicular use and parking on vacant lots.....	6-141
32.	Enhanced enforcement of trespass ordinances and codes.....	6-157

TABLE 6-1

FIVE PERCENT PLAN FOR PM-10 COMMITTED MEASURES(Continued)

33.	Ability to assess liens on parcels to cover the cost of stabilizing them (Recover costs of stabilizing vacant lots)	6-169
34.	Increase fines for open burning	6-172
35.	Restrict use of outdoor fireplaces and pits and ambience fireplaces in the hospitality industry.....	6-174
36.	Require barriers in addition to Rule 310 stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits	6-175
37.	Reduce the tolerance of trackout to 25 feet before immediate cleanup is required for construction sites be placed in Maricopa County Rule 310.....	6-177
38.	No visible emissions across the property line be placed in Maricopa County Rule 310 and 310.01, and in local ordinances for nonpermitted source appropriate.....	6-180
39.	Modeling cumulative impacts-The measure would need further definition by Maricopa County and the Arizona Department of Environmental Quality and be subject to input to ensure that unintended consequences for temporary uses are not created	6-184
40.	MAG member agencies reexamine existing ordinances to ensure that nonpermitted sources, such as unpaved parking, unpaved staging areas, unpaved roads, unpaved shoulders, vacant lots and open areas, receive priority attention.....	6-185
41.	Forward to Governor's Agricultural Best Management Practices Committee that cessation of tilling be required on high wind days and that agricultural best management practices be required in existing Area A	6-185
42.	The Arizona State Legislature provide funding to the Arizona Department of Environmental Quality for four agriculture dust compliance officers for a total of five inspectors.....	6-186
43.	MAG allocate \$5 million in FY 2007 MAG federal funds matched on a 50/50 basis by MAG member agencies for paving dirt roads and shoulder projects and that these projects be immediately submitted to MAG for consideration at the July meetings of the MAG Management Committee and Regional Council for an amendment to the Transportation Improvement Program These funds would be on a nonsupplanting basis for new projects.....	6-186
44.	Maricopa County should increase consistent enforcement in areas where PM-10 violations continue to occur, along with efforts throughout the region. When an area continually experiences higher PM-10 concentrations than other areas, increased enforcement in areas experiencing high monitor readings is needed to protect public health.....	6-186

TABLE 6-1

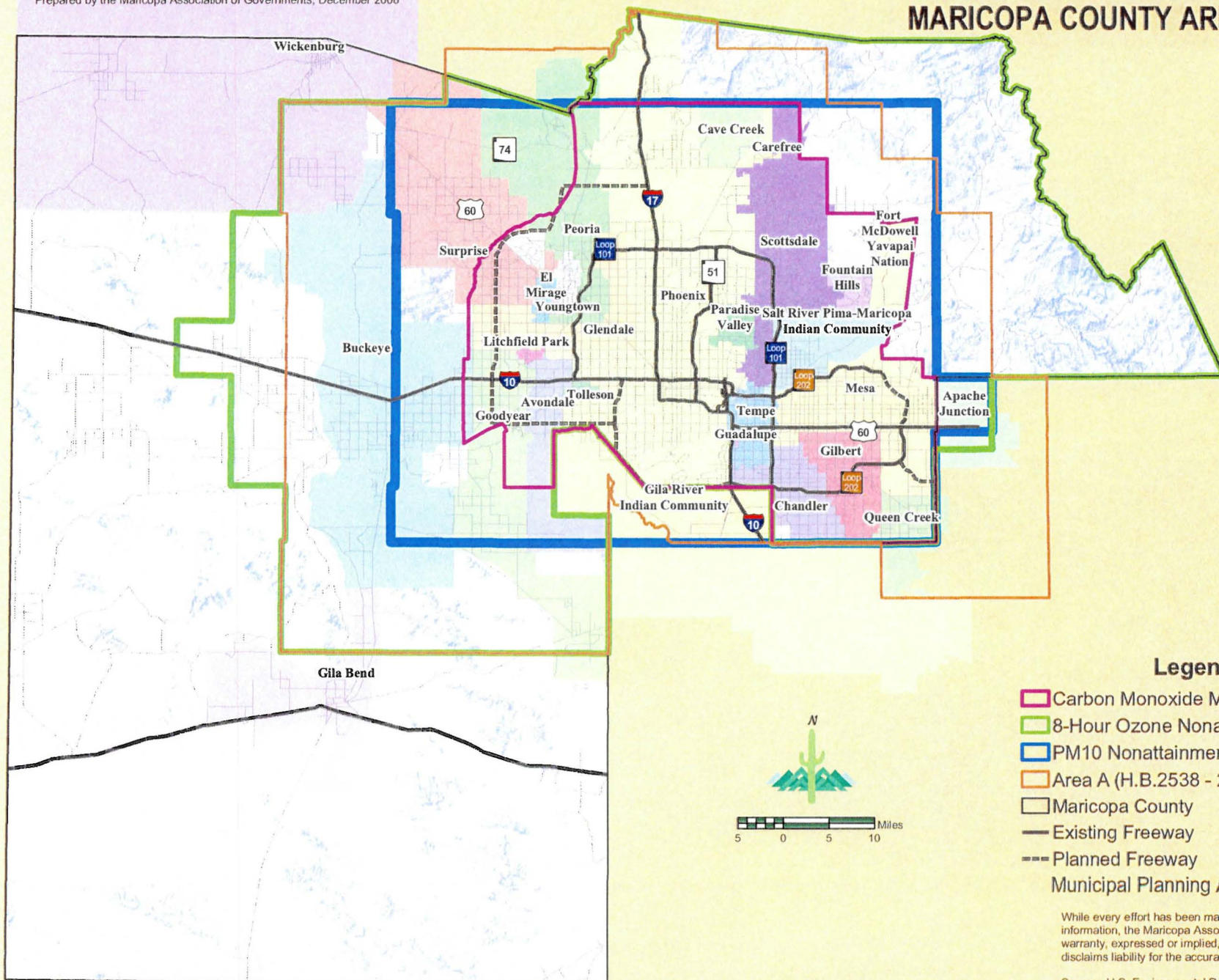
FIVE PERCENT PLAN FOR PM-10 COMMITTED MEASURES(Continued)

PART 2: ADDITIONAL COMMITMENTS FOR MEASURES NOT ON THE SUGGESTED LIST

45.	Prohibit use of leaf blowers on unstabilized surfaces.....	6-189
46.	Outreach to off-road vehicle purchasers.....	6-190
47.	Ban open burning during the ozone season.....	6-190
48.	Require residential woodburning ordinances to include no burn restrictions on high pollution advisory days.....	6-191
49.	Allow Peace Officer enforcement of load covering.....	6-191
50.	Require two agricultural best management practices.....	6-191
51.	Conduct an inventory of dirt roads, alleys and estimated traffic counts.....	6-192
52.	Coordinate public transit services with Pinal County.....	6-192
53.	Repave or overlay paved roads with rubberized asphalt.....	6-193

Figure 6-1

AIR QUALITY NONATTAINMENT AND MAINTENANCE AREAS FOR THE MARICOPA COUNTY AREA, ARIZONA



Legend

- Carbon Monoxide Maintenance Area
- 8-Hour Ozone Nonattainment Area
- PM10 Nonattainment Area
- Area A (H.B.2538 - 2001)
- Maricopa County
- Existing Freeway
- Planned Freeway
- Municipal Planning Areas shaded

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Source: U.S. Environmental Protection Agency,
g:\dev\maps\AQ\85x11\aq_bounds_with_AreaA_MPA.mxd

3. October 1, 2007- Disseminating educational material to City buildings and at scheduled neighborhood meetings.

It is estimated that preparation of the educational materials, website and distribution leading to the implementation of this measure will require a staff time equivalent to 0.10 FTE, at a cost of \$6,000. This will be accomplished by current department personnel under the adopted city budget for FY 07-08. The ongoing cost of administration and materials after startup is estimated at \$2,000 and will be accomplished through future budgets. This measure will be staffed and administered under Public Works Department. Progress in implementing the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. A copy of any educational materials will be forwarded to Maricopa County and/or MAG per any progress request.

2007 ■ City of Avondale will begin an information campaign that increases the public's awareness of the PM-10 issue. The focus of the campaign will highlight what Avondale and its citizens can do to reduce airborne dust. Legal authority for this action is proved under A.R.S. Section 9-240, General Powers of Common Council. Avondale will assist Maricopa County to increase public awareness of the PM-10 problems to Avondale residents. The city will utilize the materials and/or information developed by the County and distribute/communicate them through various methods, e.g., neighborhood outreach and HOA meetings, city webpage, Cable TV-Channel 11, citizen and employee newsletters, and stocking brochures at the City's public facilities, including libraries. The Community Relations & Public Affairs Department is responsible for the city's public information and community outreach programs. Funding for the implementation of this measure will be absorbed in the department's budget allocation. The measure will be enforced at the direction of the City Manager's Office and staffed and administered under the Community Relations and Public Affairs Department. Avondale staff will track the number and type of calls received regarding dust issues to determine the effectiveness of the outreach campaign. The City will submit progress reports, when requested by outside agencies.

2007 ■ Town of Buckeye indicates that this measure would involve publicity campaigns (e.g., Bring Back Blue) that increase public awareness of the PM-10 problem and discourage citizens from participating in activities that generate airborne dust. This measure will be implemented by the Town of Buckeye Public Works Department. Legal authority for this action is provided under Arizona Revised Statutes Sections 9-240(A) and (B)(3). The Public Works Department includes funding requests in annual budgets needed to increase awareness of Public Works activities. The annual budget for the Public Works Department includes funds set aside for campaign information to raise public awareness of Public Works activities. Personnel involved in developing campaign activities will be performed by current department resources allocated with the 2007/2008 fiscal

year budget. Publicity campaign activities will be staffed and administered under the Public Works Department. The Public Works Department will provide progress reports to inquiring agencies upon request. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency.

- 2007 ■ Town of Carefree will participate in county wide publicity campaigns and locally through the Town's newsletter and website. This measure will be implemented by the Town of Carefree. The local program campaign will begin upon approval of the Resolution implementing the control measure. The Town of Carefree budgets funds annually for the printing of the newsletter and maintenance of the website. The Town of Carefree will administer and monitor the local program.
- 2007 ■ Town of Cave Creek will participate in county wide publicity campaigns as required and locally through the Town of Cave Creek's newsletters and website. This measure will be implemented by the Town of Cave Creek. County wide publicity will be directed by the local program will begin upon approval of the Resolution implementing these control measures. The Town of Cave Creek budgets funds annually for the printing of the newsletters and maintenance of the Town of Cave Creek website. The Town of Cave Creek will administer the local program. The Town of Cave Creek will monitor the local program.
- 2007 ■ City of Chandler indicates that this measure would involve public information and an education campaign to increase public awareness of PM-10 issue and discourage citizens from participating in activities that generate airborne dust. The City of Chandler through the actions of the Communications and Public Affairs Department will develop public information materials, i.e. brochures, newsletter and newspaper articles, columns, video segments that deal with dust control that will air on Chandler's regular-running programs (Chandler Public Works at Work and CityScope, etc.), to inform the citizens of Chandler of the health risks associated with PM-10 pollution and ways in which they can participate in reducing such pollution. Such public information materials will be disseminated to the community via the City's Web site, monthly citizen newsletters, Cable Channel 11, and through the media. Progress of this project will be managed by the Department Director or his designee. Public information materials will be developed by the end of 2007 and will be distributed through 2007 and 2008 during the months of stagnation and high dust conditions.

These public information materials will be developed using in-house resources. This effort will be accomplished with City staff. Supplies and other resources including production, printing and distribution are estimated to cost \$1900. The program will be designed to encourage the citizens of Chandler to voluntarily make life style changes that will benefit the environment and reduce PM-10 pollution levels. Progress with production and dissemination of the information

will be overseen by the Communication and Public Affairs Director or designee and will be reported to the City Manager's Office by the end of each fiscal year. Specific metrics will be tracked as to the amount of public information materials that are produced and how much media placement-both internal (to City employees) and external (to our citizens) is logged. A copy of this report will be submitted by the City Manager to Maricopa County annually. Maricopa County is responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency.

- 2007 ■ City of El Mirage indicates that this measure would involve a publicity campaign involving Maricopa County's "Bring Back Blue" public service announcement for the local government access channel, a PM-10 awareness/ FAQ pamphlet for distribution to local residents, and an electronic version of the PM-10 awareness/ FAQ pamphlet published on the official city website. The City of El Mirage Technology Services Department with the assistance of the City Manger's Office will be responsible for the broadcast of the "Bring Back Blue" public service announcement on the local government access channel as well as the development and distribution of the community awareness/FAQ pamphlet and website publishing. The "Bring Back Blue" public service announcement is scheduled for broadcast beginning January 2008. The PM-10 awareness/FAQ pamphlet and website content will be available for distribution and electronically published beginning January 2008. It is estimated that preparation of the public service announcement and design and implementation of the pamphlet and website materials will require approximately 60 hours staff time. This will be accomplished by current department personnel under the adopted FY 2007/08 city budget. This measure requires a single phase implementation which will be monitored internally by the Technology Services Director. Quarterly checks for public service announcement updates will be conducted by the Technology Services Department.
- 2007 ■ Town of Fountain Hills indicates that the Town will distribute informational brochures and bulletins produced by the Arizona Department of Environmental Quality (ADEQ) and Maricopa County in the Town quarterly newsletter, the Compass. The Town will provide educational materials to contractors, engineers and architects when they are at Town Hall. The Town has a telephone hot line. The Town will include dust control as an item to be monitored on the hotline. Legal authority for this action is provided under A.R.S. Section § 9-240, General Powers of Common Council. The Town of Fountain Hills will assist Maricopa County in increasing public awareness of the PM-10 problems to Fountain Hills residents. The Town will utilize the materials and/or information developed by the County and ADEQ, and distribute/communicate them through various methods, e.g., neighborhood outreach and HOA meetings, Town webpage, Cable TV-Channel 11, citizen and employee newsletters, and brochures at the Town's public facilities, including the library. The Town Public Information Officer (PIO) is responsible for the Town's public information and

community outreach programs. Funding for the implementation of this measure will be absorbed in the department's budget allocation. The measure will be enforced by the Public Works Director and Planning and Zoning Director and their appropriate staff. Town staff will track the number and type of calls received regarding dust issues to determine the effectiveness of the outreach campaign. The Town will submit progress reports when requested by outside agencies. See Town Code 9-3 and 12-2-11, attached to the resolution.

- 2007 ■ Town of Gilbert indicates that the Town distributes outreach materials from Maricopa County air quality campaigns as they are received at various Municipal facilities, and the Southeast Regional Library. New materials provided by the County and State, will be distributed as they become available. In addition, the Town publishes outreach materials on air quality for distribution at the above-mentioned locations.

The Town will continue to publish articles in Town publications on particulates and other air quality issues, including information to encourage residents to avoid dust-generating activities. The outreach efforts will also address the proper use of leaf blowers. Town publications include *Your Town*, circulated to all Town residents, and *Talk of the Town*, the employee newsletter. Information on air quality is accessible on the Town internet website with links to the Arizona Department of Environmental Quality and Maricopa County Air Quality Department.

The Town procedures a public information broadcast, also titled *Your Town*, presented on the Gilbert government cable channel. The Town will produce segments for the broadcast focusing on educating citizens on how they can assist in addressing air quality, dust control, and the proper use of leaf blowers. In addition, any digitally recorded information provided by the County or ADEQ could be broadcast as well.

The implementing agency and authority for implementation are as follows:

Town of Gilbert, Town Managers Office
Town of Gilbert, Risk Management Department
A.R.S., Section 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers

Materials for the Maricopa County campaigns continue to be distributed. Distribution of other materials from the State and County will be distributed, as they become available. Publication and production of air quality articles, government cable channel and website information is ongoing. Distribution estimates: Circulation for Town publications include: *Your Town*-60,000 direct mailed to Gilbert citizens monthly; *Talk of the Town*-1,000 delivered with paychecks to employees monthly. The Town Environmental Programs

homepage has approximately 11,500 hits per year. *Your Town* broadcasts daily, at various times, on Channel 11 each month potentially reaching 42,347 cable subscribers. Outreach programs will be conducted within the operating budget for the Town Managers Office and Risk Management Department. The budget for the production of Town publications and broadcasts are included in the annual budget. This measure does not involve an Ordinance or Code therefore no direct enforcement program is required. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Glendale indicates that this measure would involve publicity campaigns that increase public awareness of the PM-10 problem and discourage citizens from participating in activities that generate airborne dust. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council and the Glendale Charter. Glendale will assist Maricopa County to increase public awareness of the PM-10 problem to Glendale residents. The City will utilize the materials and/or information developed by the County and distribute/communicate them through various methods, e.g., city webpage, Cable TV-Channel 11, citizen and employee newsletters, and stocking brochures at the city's libraries. The Marketing/Communications Department is responsible for the city's publicity programs. Funding for the implementation of this measure is determined in the city's annual budgeting process. This measure will be implemented administratively. The Marketing/Communications Department will document progress made in implementing this measure. The Environmental Resources Department will periodically monitor the progress made toward the implementation of this measure. The City will prepare and submit progress reports, when requested by outside agencies.
- 2007 ■ City of Goodyear indicates that the City will develop a marketing campaign based on the County's Bring Back Blue campaign that increases the awareness of the PM-10 problem and discourages citizens from participating in activities that generate airborne dust. The City will display advertisements in local newspapers and display ads on the City's website and newsletter which reaches all Goodyear residents. The City will also draft press releases featuring local events surrounding the implementation of PM-10 reduction measures and feature local stories about how individuals/industries have contributed to the reduction of PM-10. Additionally, the City will promote the City's ordinance regulating the use of ATVs in the river bottom. The City will also provide information at City facilities and will distribute brochures to contractors in the field. Units: Circulations for City publications includes: Same Page ~ 400 city employees; Resident Newsletter ~ 50,000 residents. The City homepage, air quality web paged has hits.

This measure will be implemented by the City of Goodyear, Public Information Office. Materials for the Maricopa County Bring Back Blue campaign materials were distributed in 2007. Distribution of other materials from the State and

County will be distributed, as they become available. Air quality/particulate pollution articles and web site information is ongoing. Outreach programs will be conducted within the operating budget for the Public Information Office. \$5,000 is budgeted for advertising in local newspapers. This is an administrative program implemented by the City Manager's Office. This measure does not involve an Ordinance or Code, no direct enforcement program is required. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Guadalupe indicates that the Town Council commits to distributing informational brochures and bulletins produced by the Arizona Department of Environmental Quality and Maricopa County through the Town's Building and Development Department to building and development representatives when they meet with the Town's building inspector. Dust control and mitigation information will also be included in the Town's building information packet which will be distributed to all individuals requesting a permit from the Building Department. The building inspector, through the authority granted by A.R.S. Section 9-240, will distribute materials to the individuals responsible for obtaining the required building and development permits at the time a request for information to obtain a permit is made. The informational brochures and bulletins will be incorporated into the building information packet by August 1, 2007, with additional information being added to the packet over the next two years. Implementation of the measure will be conducted by the current building inspector. Material costs will be absorbed by the Building Inspection Department in the current and future years. Staff will track the number of permits issued that involve a new structure of significant development of property.
- 2007 ■ City of Litchfield Park indicates that the City Council will proclaim the first week of August to be "Dust Awareness Week". Accompanying this action will be a news release to the local media. A flyer discussing the importance of reducing dust in the City of Litchfield Park will be made available in all city offices with public accessibility. Citizens will be able to call City Hall and speak with designated staff regarding air quality concerns. Right-of-way encroachment and on-site building permits will be modified to include a reminder of dust control requirements. The City of Litchfield Park Public Works Department, through the authority granted to them by A.R.S. § 9-240 will be responsible for implementation. The program will begin on August 1, 2007 with the proclamation of "Dust Awareness Week", and will recur each of the following two years. The program will be implemented by existing personnel. The annual time and material cost to implement the measure is estimated to be \$500-\$2,000 in FY 2008 and FY 2009. Staff will track the number and type of calls received regarding dust issues to determine if the outreach campaign is effective.
- 2007 ■ City of Mesa indicates that the City will distribute materials from the Maricopa County Bring Back Blue campaign, at City household hazardous waste collection

events, and at various City facilities. Other materials provided by the County and State will be distributed as they become available. The City will also create and publish articles on dust control in various publications such as the City Manager's message, employee newsletters, and in the City of Mesa utility bill and will continue to conduct annual dust awareness training for field personnel. The City will maintain air quality information on the City's Internet web site and provide residents with the ability to file on-line dust complaints with the City of Mesa. The City will also maintain links on its website to the Arizona Department of Environmental Quality, Maricopa County Air Quality Department, and other educational information related to air quality. In addition, the Police Department has coordinated with the Tonto National Forest Mesa Ranger District and the Arizona Trail Riders on public outreach efforts on recreational and motor vehicle use in desert areas. The Environmental Programs Division is responsible for conducting public education and outreach related to regional air quality issues. AZ Revised Statute, Section 9-240: General Powers of Council. Mesa City Charter, Article I: Powers of the City.

Maricopa County Bring Back Blue materials were distributed at two household hazardous waste events during fiscal year 06/07. Approximately 2,000 residents attended these events. The City of Mesa has four HHW events scheduled for FY 07/08. Approximately 400 city employees were trained on dust awareness in FY 06/07. Over the past several years, the Environmental Programs Division has received approximately 80 dust complaints per year. Air quality dust control articles are published periodically and web site information is updated continuously. Funding is allocated through the annual budget process to fund staff positions in Environmental Programs. This measure does not involve an ordinance or code therefore; no direct enforcement program is required. The City of Mesa will submit progress reports to the State and/or County upon request.

- 2007 ■ Town of Paradise Valley indicates that the Town commits to distributing informational brochures and bulletins produced by the Arizona Department of Environmental Quality and Maricopa County at quarterly meetings with the building and development community. Dust control and mitigation information will also be included in the Town's "Builders' Letter" mailed to contractors and developers operating in the Town, and included in the "Town Reporter" publication mailed to all residents. Paradise Valley Police Officers will also distribute informational brochures after business hours and on the weekends to those who appear to be in violation of PM-10 particulate pollution and/or those with questions about dust pollution. The Town's Planning & Building Department will distribute materials to the building and development community through its "Builders Letter" and at Building Community Meetings. The Town Managers Office will coordinate the inclusion of dust control and air quality information in the "Town Reporter." The Chief of Police will coordinate the distribution of brochures by Police Officers.

Development Community Meetings are held quarterly by the Planning & Building Department. The "Builders' Letter" is also mailed on a quarterly basis. The "Town Reporter" is produced bi-annually. It is anticipated that there will be several opportunities to include information on dust control mitigation measures during 2008 and 2009. Implementation of the measure will be conducted by current departmental personnel. Material and staffing costs will be absorbed by current departmental budgets in current and future fiscal years. The measure will be enforced at the direction of the Town Manager's Office and staffed and administered under the Planning & Building Department. The Town will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Peoria indicates that this measure will involve publicity campaigns that increase public awareness of the PM-10 problem, and discourage citizens from participating in activities that generate airborne dust. The City of Peoria Communication and Public Affairs, Engineering and Police Departments will be the responsible agencies and authority for implementing the measure. The City of Peoria Police Department currently is providing education and outreach for illegal All Terrain Vehicle use within targeted areas, based on citizen complaints. The Engineering Department will provide brochures, developed by Maricopa County, as a handout for all grading and drainage permits. The Communication and Public Affairs Department will air "Bring Back Blue", and other videos, on public Channel 11, which will be done in cooperation with the Maricopa Association of Governments, Maricopa County and the other valley cities. The airing of "Bring Back Blue", will commence July 2007; the other videos will be aired as developed. The brochures will be handed out beginning this fall. The City of Peoria Police Department: two Officers for 1/4 time, the Communication and Public Affairs Department two Technicians for two hours each per week and the Engineering Department two Technicians and nine Offsite Inspectors for two hours each per week will be involved with measure implementation. The various Departments will track the quantities and/or time of the various items mentioned above, and provide a report to Maricopa County.

2007 ■ City of Phoenix indicates that the City has received outreach materials from the Maricopa County Bring Back Blue campaign and those continue to be distributed at City libraries. Other materials provided by the County and State, will be distributed as they become available. The City will publish articles on particulates and other air quality issues, including information to encourage residents to avoid dust-generating activities. The outreach efforts will also address the proper use of leaf blowers. Examples of City publications include the employee newsletter (City Connection), the City's environmental newsletter (EnviroNotes), and the newsletter distributed in the municipal customer water bill (Notes). The City maintains air quality information on the Phoenix.gov internet website with links to the Arizona Department of Environmental Quality, Maricopa County Air Quality Department, and may include other educational web sites.

Units: Distribution estimates: In 2007, the City received the following materials from the County Bring Back Blue campaign for continuing distribution at the libraries: 4,800 bookmarks, 1,650 brochures, and 50 window clings. Estimated circulation for City publications includes: City Connection ~ 14,000 employees; EnviroNotes ~ 800 employees and outside contacts; NOTES, ~ 400,000 water customers. The City homepage, air quality web page has approximately 2,700 hits per year.

City of Phoenix, Office of Environmental Programs will implement the measure. A.R.S., Section 9-240: General Powers, Rights, and Liabilities. Materials for the Maricopa County Bring Back Blue campaign materials continue to be distributed. Distribution of other materials from the State and County will be distributed, as they become available. Publication of air quality/particulate pollution articles and website information is ongoing. Outreach programs will be conducted within the operation budget for the Office of Environmental Programs. This is an administrative program that does not involve an Ordinance or Code. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Queen Creek indicates that the Town Council will proclaim the first week of August to be "Dust Awareness Week". Accompanying this action will be a news release to the local media. A flyer discussing the importance of reducing dust in the Town of Queen Creek will be made available in all Town offices with public accessibility. A "Dust Control Hotline" will be set up to receive calls from the public and staff regarding air quality concerns. Right-of-way encroachment and on-site building permits will be modified to include a reminder of dust control requirements. The Town of Queen Creek Public Works Department, through the authority granted to them by A.R.S. § 9-240. Program will begin on August 1, 2007 with the proclamation of "Dust Awareness Week", and will recur each of the following two years. The program will be implemented by existing personnel. The annual time and material cost to implement the measure is estimated to be \$2,000-\$5,000 in FY 2007/08, \$2,000 in FY 08/09 and \$2,000 in FY 09/10. Staff will track the number and type of calls received regarding dust issues to determine if the outreach campaign is effective.
- 2007 ■ City of Scottsdale indicates that this measure will involve publicity campaigns that increase public awareness of the PM-10 air quality problem and discourage citizens from participating in activities that generate airborne dust. Maricopa County is the lead agency for this publicity campaign, with cooperation from Valley Cities. The City of Scottsdale has received information from Maricopa County's Construction Site Dust Control Campaign. The information continues to be distributed at the City's permit office (One Stop Shop). Other materials

provided by the County and State, would be distributed as they become available.

The City could provide internal and external communications on particulates and other air quality issues, including how residents can avoid dust-generating activities. Examples of City internal and external communication publications include the employee electronic weekly newsletter (CityLine), the City's newsletter distributed in the municipal customer water bill (PRIDE), the City's various and appropriate electronic newsletters (Scottsdale Update, Scottsdale Update-Development Focus, Green Building Events), the City's internal electronic "High Pollution Advisory Notice", the City's website with links to the Arizona Department of Environmental Quality, Maricopa County Air Quality Department and possible other educational web sites. If in case of changes to the city's ordinances as they may pertain to dust control, the City's internal and external communications would reflect those changes and may include information about the use of leaf blowers, off-road vehicle use, speed limits reductions on unpaved roads, parking on unpaved lots, vehicular trespassing and the use of outdoor fireplaces.

Units: in 2007, the City received materials from the County's Construction Site Dust Control Campaign for continued distribution at the City's One Stop Shop: 500 brochures. Distribution Estimates: Estimated circulation for City publications include: CityLine:~2600 employees (weekly publication); Scottsdale Update: 3723 subscribers (weekly publication), Scottsdale Update-Development Focus: 4207 subscribers (second weekly publication), Green Building Events: 1692 subscribers (monthly publication); PRIDE, ~90,000 water customers (monthly publication); High Pollution Advisory Notice: ~2600 employees (periodic notifications). The City's outreach awareness program could also include communications to the Scottsdale-based corporate communities, non-profit organizations, Chamber of Commerce and Convention and Visitor's Bureau.

City of Scottsdale Office of Environment and Preservation and Office of Communication & Public Affairs will be responsible for implementation. A.R.S. Section 9-240: General Powers of Council. Scottsdale City Charter, Article 13: General Provisions. Materials for the Maricopa County's Construction Site Dust Control Campaign materials continue to be distributed. Distribution of other materials from the State, County and City would be distributed as they become available. Publication of air quality/particulate pollution information is ongoing. Outreach programs will be conducted within the operating budget for the Office of Environment and Preservation and/or Communications and Public Affairs. This is an administrative program that does not involve an Ordinance or Code. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Surprise indicates that the City will develop a program using outreach materials from the Maricopa County Bring Back Blue campaign and distribute them at City libraries. Other materials provided by the County and State, will be distributed as they become available. The City of Surprise will publish articles on particulates and other air quality issues, including information to encourage residents to avoid dust-generating activities. The outreach efforts will also address the proper use of leaf blowers. Examples of City publications include the Surprise Progress, www.surpriseaz.com and the intranet (insidesurprise). City of Surprise, Communication and Public Works Departments will be responsible for implementation. Materials for the Maricopa County Bring Back Blue campaign materials will be distributed by March 2008. Distribution of other materials from the State and County will be distributed, as they become available. Publication of air quality/particulate pollution articles and website information is ongoing. Outreach programs will be conducted within the Communications and Public Works Department's operational budgets. This is an administrative program which does not require or involve an Ordinance or Code. The City will submit progress reports to State and/or County agencies upon request.
- 2007 ■ City of Tempe indicates that the City will distribute information materials received from the State and County, (e.g. Bring Back Blue) at city libraries or through broadcast on Channel 11 as professionally made broadcast material is made available to the City. The City will Include information on particulate matter in city environmental publications and newsletters distributed with the water bill. The Water Utilities Department (Environmental Services Division) in cooperation with the City of Tempe's Community Services Administration, Community Relations Department, Communications & Media Relations Department will be responsible for implementation. Distribution of materials from the State and County as materials are made available. The measure can be implemented within personnel and funding available in the City's 2006-07 and 2007-08 operating budgets, and would be considered in budget planning for 2008-09. The City's Water Utilities Department (Environmental Services Division) will distribute materials and coordinate participation from other city departments to implement this measure. The City will submit progress reports on measure implementation to the MCESD, ADEQ, or MAG upon request.
- 2007 ■ City of Tolleson indicates that the City will begin an information campaign that increases the public's awareness of the PM-10 issue. The focus of the campaign will highlight what Tolleson and its citizens can do to reduce airborne dust. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council. Tolleson will assist Maricopa County to increase public awareness of the PM-10 problem to Tolleson residents. The City will utilize materials and/or information developed by the County and distribute/communicate them through various methods, e.g., city webpage, citizen and employee newsletters, and stocking brochures at the City's public

facilities, including the libraries. The program will be implemented by existing personnel. Funding for the implementation of this measure will be absorbed in the Public Works Department budget allocation. Tolleson staff will track the number and type of calls received regarding dust issues to determine the effectiveness of the outreach campaign.

2007 ■ Town of Youngtown indicates that Bring Back Blue materials will be available at all town facilities, meeting and website. The Town will place a notice in Town newspaper (Youngtown Village Reporter). The Town will distribute materials to HOA, organizations, churches, property owners and tenants. The following Town of Youngtown Departments are responsible for implementation: Police, Code Compliance and Town Clerk. September 2007. Departmental Budgets in Police, Code Compliance and General Government contain funding for this program. The monitoring program will involve maintaining the supply of materials and keeping the information fresh and updated.

2007 ■ Maricopa County indicates that the County will initiate and manage a comprehensive outreach program designed to educate the public on the health effects and sources of particulate matter emissions and reduce the PM₁₀ emissions in Maricopa County. The campaign will aim to curtail activities that contribute to PM₁₀ by asking the public, among others, to reduce vehicle travel, avoid driving on dirt roads, avoid use of dust blowing and PM₁₀ emitting garden equipment, reduce outdoor burning activities, and conserve electricity. Maricopa County will be the responsible agency to initiate and manage the Bring Back Blue Clean Air Initiative. Maricopa County will provide and share campaign materials with cities, towns, regulators as well as members of the community. The schedule for implementation of the Bring Back Blue Clean Air Initiative is as follows:

January 2007	Launch multi-media campaign including website and collateral materials as well as billboard, television, radio and print advertising.
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Winter-Spring 2007/08	Active campaign advertising (purchase of media advertising during times of most frequent particulate exceedance points) and school outreach activities.
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Ongoing	Website maintenance, news story generation, e-mail newsletters to subscribers, outreach to communities/individuals through speakers and Bring Back Blue informational booths at community events.
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Maricopa County allocated \$1.025 million in FY 2006/07 to create and implement the Bring Back Blue Clean Air Initiative. In FY2007/08 the Maricopa County Air Quality Department will seek approval of \$1.4 million to continue the

initiative. The cost of an ongoing program will fluctuate based on the need for media advertising, both creating and providing television, radio and print advertising as well as purchasing advertising time. In addition, ongoing costs will include website maintenance, email newsletters, and outreach activities. Funding will be provided through the Air Quality Department's fund balance. Compliance with this measure by the public is voluntary; therefore, enforcement is not applicable. Maricopa County will monitor the progress and success of the Bring Back Blue Clean Air Initiative through market research, website statistics and gross impressions through media advertising.

2007 ■ Arizona Department of Transportation indicates that this measure would aide Maricopa County Air Quality Department in increasing the public awareness of sources and health effects of PM-10 and discourages citizens form participating in activities that generate airborne dust. (i.e., distribute materials from "Bring Back Blue" campaign.) The outreach material could focus on the "Dirty Dozen" - twelve actions that individuals can take to reduce particulate matter pollution:

1. Drive less, particularly on pollution advisory days. Reduce the number of trips you take in your car.
2. Don't drive in the dirt.
3. Drive slowly on unpaved roads.
4. Don't use leaf blowers and other equipment that raise a lot of dust.
5. Avoid using gas-powered lawn and garden equipment.
6. Maintain your landscape. Cover loose dirt with vegetation or gravel.
7. Reduce fireplace and woodstove use, and don't use a wood-burning fireplace or stove on no-burn days.
8. Consider using gas instead of wood. If you use a wood-burning stove or fireplace insert, make sure it meets EPA design specifications and burn only dry, seasoned wood.
9. Conserve electricity.
10. Don't burn leaves, trash or other material.
11. Report serious offenders to the appropriate air quality agency.
12. Support laws, rules, and efforts to make our air healthier.

A variety of techniques could be used to conduct the outreach program including the following; Development and maintenance of Website links to such as BringBackBlue.org, On-line activities for kids such as those contained on the Website of ADEQ, Additional advertising with use of leaflets and ongoing series of feature articles in ADOT newsletter, message boards or MVD/ADOT lobbies.

The Arizona Department of Environmental Quality, which is empowered by A.R.S. § 49-104 to take necessary steps to protect the environment, would take the lead statewide, with local agencies such as the Maricopa County Air Quality Department coordinating the program in their jurisdictions. ADOT coordination in districts and departments as appropriate and encourage the involvement of the transportation departments of local agencies located in the nonattainment areas. The additional support for education of PM-10 can be kicked off on or before January 1, 2008. ADOT has current staff and Division Communication and Community Partnership that coordinate public involvement and develop newsletters. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the nonattainment area plans. ADOT will submit progress reports or any additional records of implementation to Maricopa County Air Quality Division or ADEQ, upon request.

2. Extensive Dust Control Training Program

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires in a county with a population of two million or more persons or any portion of a county in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, that no later than January 1, 2008, the control officer shall develop and implement basic and comprehensive training programs for the suppression of PM-10 emissions from sources of PM-10 that are subject to a permit issued by a control officer that requires control of PM-10 emissions from dust generating operations. The control officer may approve training developed and provided by a third party and the Board of Supervisors may adopt rules prescribing standards for dust control training (A.R.S. § 49-474.05 A. and B.).

The bill requires that at least once every three years, the following persons are required to successfully complete basic dust control training:

1. The site superintendent or other designated on-site representative of the permit holder if present at a site that has more than one acre of disturbed surface area that is subject to a permit issued by a control officer requiring control of PM-10 emissions from dust generating operations.

2. Water truck and water pull drivers (A.R.S. § 49-474.05 C.).

Persons who are required to be trained under this section shall complete the training no later than December 31, 2008. All persons who have successfully completed training during the 2006 and 2007 calendar years are deemed to have satisfied this requirement if the training program completed was conducted or approved by a county air pollution control officer. Completion of the training required under subsection G. satisfies the requirements of this subsection (A.R.S. § 49-474.05 D.).

No later than June 30, 2008, the permittee for any site of five acres or more of disturbed surface area subject to a permit issued by a control officer requiring control of PM-10 emissions from dust generating operations shall have on site at least one dust control coordinator trained in accordance with this section at all times during primary dust generating operations related to the purposes for which the dust control permit was obtained (A.R.S. § 49-474.05 E.).

At least once every three years, the dust control coordinator shall successfully complete a comprehensive dust control class conducted or approved under subsection A by the county air pollution control officer with jurisdiction over the site. The dust control coordinator shall have a valid dust training certification identification card readily accessible on site while acting as a dust control coordinator. All persons having successfully completed training during the 2006 and 2007 calendar years are deemed to have satisfied this requirement if the training program completed was conducted or approved by a county air pollution control officer (A.R.S. § 49-474.05 G.).

S.B. 1552 indicates that subsections C. and D. do not apply when on-site dust generating operations are conducted by a permittee who is required to obtain a single permit for multiple noncontiguous sites that is issued by a control officer and that requires control of PM-10 emissions (A.R.S. § 49-474.05 H.).

The requirements of subsections E and F lapse if all of the following apply: 1. The area of the disturbed surface area is less than five acres. 2. The previously disturbed areas are stabilized in accordance with the requirements of applicable rules. 3. The permittee provides notice of the acreage stabilized to the control officer (A.R.S. § 49-474.05 I.).

Permittees who are required to obtain a single permit for multiple noncontiguous sites that is issued by a control officer and that requires control of PM-10 emissions from dust generating operations shall have on sites with greater than one acre of disturbed surface area at least one individual who is designated by the permittee as a dust control coordinator trained in accordance with subsection C. The dust control coordinator shall be present on site at all times during primary dust generating activities that are related to the purposes for which the

permit was obtained. This subsection does not apply to permittees subject to subsections B and C. (A.R.S. § 49-474.05 J.).

- 2007 ■ Maricopa County indicates that the County will develop and implement basic and comprehensive training programs for the suppression of PM₁₀ emissions from sources of PM₁₀ that are subject to a permit that requires control of PM₁₀ emissions from dust generating operations. The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 establishes training requirements for site superintendents, water truck and water pull drivers, and dust control coordinators at sites subject to a permit requiring control of PM₁₀ emissions from dust generating operations.

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

Rule 280 revisions:

August 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

Rule 316 revisions:

August 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions

March 2008 Board consideration of rule revisions

Database Development:

January 2008 Develop training database

Training Program Development:

December 2007 Develop "comprehensive" and "basic" training programs

March 2008 Develop "train the trainer" class

May 2008 Develop a training video for cities

Staffing:

December 2007 Hire 2 dust control compliance and 2 administrative support personnel to coordinate and conduct the training programs

The Maricopa County Air Quality Department Dust Compliance Division will administer the dust control training program. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program is contained in Maricopa County Measure #8. Specific to the dust control training program, the Air Quality Department will seek approval to hire 2 additional dust control compliance personnel and 2 administrative support staff to coordinate and conduct the basic and comprehensive training programs.

The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs associated with 2 additional dust control compliance and 2 administrative support personnel are estimated to be \$250,000. Start-up costs for database development, equipment, and training room rental are estimated to be \$415,000. Annual costs for database maintenance, training materials, and room rental are estimated to be \$132,000. Training cards will be issued to individuals who complete the training. Verification that training requirements have been met will be done during inspections. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department will track individuals who have completed the required training.

3. Dust Managers required at construction sites of 50 acres and greater

2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires in a county with a population of two million or more persons or any portion of a county in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, that no later than June 30, 2008, the permittee for any site of five acres or more of disturbed surface area subject to a permit issued by a control officer requiring control of PM-10 emissions from dust generating operations shall have on site at least one dust control coordinator trained in accordance with this section at all times during primary dust generating operations related to the purposes for which the dust control permit was obtained (A.R.S. § 49-474.05 A. and E.).

A dust control coordinator has full authority to ensure that dust control measures are implemented on site, including conducting inspections, deployment of dust suppression resources and modification or shutdown of activities as needed to control dust. The dust control coordinator shall be responsible for managing dust prevention and dust control on the site (A.R.S. § 49-474.05 F.).

At least once every three years, the dust control coordinator shall successfully complete a comprehensive dust control class conducted or approved under subsection A by the county air pollution control officer with jurisdiction over the site. The dust control coordinator shall have a valid dust training certification identification card readily accessible on site while acting as a dust control coordinator. All persons having successfully completed training during the 2006 and 2007 calendar years are deemed to have satisfied this requirement if the training program completed was conducted or approved by a county air pollution control officer (A.R.S. § 49-474.05 G.).

S.B. 1552 indicates that the requirements of subsections E and F lapse if all of the following apply: 1. The area of the disturbed surface area is less than five acres. 2. The previously disturbed areas are stabilized in accordance with the requirements of applicable rules. 3. The permittee provides notice of the acreage stabilized to the control officer (A.R.S. § 49-474.05 I.).

Permittees who are required to obtain a single permit for multiple noncontiguous sites that is issued by a control officer and that requires control of PM-10 emissions from dust generating operations shall have on sites with greater than one acre of disturbed surface area at least one individual who is designated by the permittee as a dust control coordinator trained in accordance with subsection C. The dust control coordinator shall be present on site at all times during primary dust generating activities that are related to the purposes for which the permit was obtained. This subsection does not apply to permittees subject to subsection B and C. (A.R.S. § 49-474.05 J.).

- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will revise Rule 310 and Rule 316 and may incorporate the following provisions:

Proposed Rule 310 revisions:

- Require the permittee for any site of 5 acres or more subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Dust Control Coordinator trained at all times during primary dust generating operations. The Dust Control Coordinator has full authority to ensure that dust control measures are implemented on site. The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.
- Require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.
- Require barriers in addition to stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.
- Require immediate cleanup of trackout at ≥ 25 feet.
- No visible emissions across the property line.

Proposed Rule 316 revisions:

- Require the permittee for any site of 5 acres or more of disturbed surface area subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Fugitive Dust Control Technician trained at all times during primary dust generating operations. The Fugitive Dust Control Technician has full authority to ensure that dust control measures are implemented on site. The Fugitive Dust Control Technician shall be responsible for managing dust prevention and dust control on the site.
- Specify requirements for operation of watering systems.

In addition, the Maricopa County Air Quality Department will evaluate the method of data reduction for opacity observations and may revise Rule 310 and Rule 316 as needed.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. §49-480 to establish, administer and enforce a program for air quality permits. The Board adopted

rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 (E) established requirements for Dust Control Coordinator and training programs for the suppression of PM₁₀ emissions from sources of PM₁₀.

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

Rule 316 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program is contained in Maricopa County Measure #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310 and Rule 316 sources;

the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316.

4. Dedicated enforcement coordinator for unpaved roads, unpaved parking, and vacant lots

- 2007 ■ Maricopa County indicates that in January 2006, Maricopa County assigned a supervisor to oversee the vacant lot program. Additionally, Maricopa County will dedicate additional resources to enforcement of Rule 310.01 and increase the number of proactive vacant lot inspections.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.01(A)(11) authorizes the county to enter the vacant lots to stabilize the disturbed surface at the expense of the owner and issue notices of violation and fines plus the cost of stabilization.

Implementation Schedule:

Staffing:

January 2006 Assigned supervisor to oversee the vacant lot program

December 2007 Hire 3 inspectors, 3 supervisors, 1 administrative support staff, and 1 administrative support supervisor for the dust control vacant lot program

June 2008 Hire 4 inspectors and 2 administrative support staff for the dust control vacant lot program

Internal Policy/On-call services contract for stabilization:

March 31, 2008 Develop procedures for implementation of on-call stabilization services

March 31, 2008 On-call stabilization services contract in place

The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and the majority of Rule 316 (Nonmetallic Mineral Mining) sources. Currently, the Dust Compliance Division has a division manager and the following level of personnel for the dust control vacant lot (Rule 310.01) program:

Position	Dust Control Vacant Lot (Rule 310.01) Personnel
AQ Inspector Supervisor	-
AQ Inspector	10
Administrative Support	-
Total	10

The Maricopa County Air Quality Department will seek approval to hire 7 dust control vacant lot compliance inspectors, 3 compliance supervisors, 3 administrative support staff, and 1 administrative supervisor to support the increased number of vacant lot inspections.

The Air Quality Department's Air Quality Enforcement Division has 1 division manager, 5 enforcement officers, and 1 administrative support personnel. The Department will seek to hire 5 additional enforcement officers. The Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs for additional dust control vacant lot personnel are estimated to be \$929,000. Annual costs for additional enforcement officers are estimated to be \$406,000.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measures(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Senate Bill 1552 authorizes the county to enter the lot to stabilize the disturbed surface, issue notices of violation, and collect monetary penalties that include the cost of stabilization. The Air Quality Department tracks the number of the enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard.

The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate this program.

5. Establish a certification program for Dust-Free Developments to serve as an industry standard

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires the Arizona Department of Environmental Quality to establish the Dust-Free Developments Program to encourage and recognize persons and entities that demonstrate exceptional commitment to the reduction of airborne dust in a county with a population of more than two million persons and in the PM-10 Nonattainment Area that contains the City of Apache Junction. The program shall include a voluntary certification process based on criteria developed by the Department (A.R.S. § 49-457.02 A.).

S.B. 1552 provides that any person or entity may apply for certification under the program, and if approved, may lawfully use a certification, seal, logo or other similar indicator established by the Department. A person or entity that is certified under the program may use the certification for promotional, civic, public relations, or public involvement purposes. This program does not include a specific expiration date (A.R.S. § 49-452.02 B. and C.).

- 2007 ■ Maricopa County indicates that the county will support the Arizona Department of Environmental Quality (ADEQ)'s efforts to develop a program to certify and publicize companies that routinely demonstrate exceptional efforts to reduce airborne dust. As the regulatory authority, Maricopa County will provide verifications of eligible companies as necessary to implement this program and as requested by ADEQ.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

The Air Quality Department will work under the schedule developed by the ADEQ. No change in funding is anticipated for this measure. The Maricopa County Air Quality Department will track the number of verifications provided to ADEQ.

6. Better defined tarping requirements in Rule 310 to include enclosure of the bed

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will revise Rule 310 and Rule 316 and may incorporate the following provisions:

Proposed Rule 310 revisions:

- Require the permittee for any site of 5 acres or more subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Dust Control Coordinator trained at all times during primary dust generating operations. The Dust Control Coordinator has full authority to ensure that dust control measures are implemented on site. The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.
- Require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.
- Require barriers in addition to stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.
- Require immediate cleanup of trackout at ≥ 25 feet.
- No visible emissions across the property line.

Proposed Rule 316 revisions:

- Require the permittee for any site of 5 acres or more of disturbed surface area subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Fugitive Dust Control Technician trained at all times during primary dust generating operations. The Fugitive Dust Control Technician has full authority to ensure that dust control measures are implemented on site. The Fugitive Dust Control Technician shall be responsible for managing dust prevention and dust control on the site.
- Specify requirements for operation of watering systems.

In addition, the Maricopa County Air Quality Department will evaluate the method of data reduction for opacity observations and may revise Rule 310 and Rule 316 as needed.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 (E) established requirements for a Dust Control Coordinator and training programs for the suppression of PM₁₀ emissions from sources of PM₁₀.

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007 Draft rule revisions and conduct stakeholder workshops

December 2007 Oral proceeding on rule revisions

March 2008 Board consideration of rule revisions

Rule 316 revisions:

April 2007-Sept. 2007 Draft rule revisions and conduct stakeholder workshops

December 2007 Oral proceeding on rule revisions

March 2008 Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program is contained in Maricopa County Measure #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement

options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310 and Rule 316 sources; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316.

7. Conduct mobile monitoring to measure PM-10 and issue NOVs

- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will develop a comprehensive mobile air monitoring program that can test for a broad spectrum of ambient air pollutants including criteria and non-criteria pollutants, hazardous air pollutants, and toxic air contaminants.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

March - June 2008	Hire and train engineers to administer the mobile air monitoring activities
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September 2008	Mobile monitoring unit will be field deployed
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The Maricopa County Air Quality Department will seek approval to hire 2 chemical engineers and 1 environmental engineer to administer the mobile air monitoring activities. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs associated with new engineering positions are estimated to be \$290,000. One-time costs to equip the mobile air monitoring unit are estimated to be \$500,000. Annual operating costs of the mobile monitoring unit are estimated to be \$40,000.

Maricopa County will test and analyze ambient concentrations and a broad spectrum of air pollutants in the stack gases emitted from the various stationary sources within Maricopa County. The Air Quality Department will assess ambient concentrations in industrialized areas and respond to complaints where

the need arises. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department will track the number of times the mobile monitoring unit is deployed for monitoring and the number of enforcement actions.

8. Conduct nighttime and weekend consistent inspections

- 2007 ■ Maricopa County indicates that the County will implement proactive and complaint inspections of nonpermitted and permitted PM₁₀ sources during non-daylight hours and on weekends through a combination of an on-call system and shift work.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

January - June 2008	Begin conducting random and after hours inspections
June - September 2008	Begin implementation of after hours, weekend, and on-call inspections

No change in level of personnel is anticipated for implementing after hours, weekend, and on-call inspections; however, pay differential is expected to result in increased costs. The Air Quality Department anticipates assigning 5 inspectors and 1 supervisor to work 2nd shift, having 5 inspectors on-call on weekends and 2 inspectors on-call on 3rd shift. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and the majority of Rule 316 (Nonmetallic Mineral Mining) sources. Maricopa County Measures #4 and #8 describe existing Dust Compliance Division FTEs and new FTEs the Air Quality Department will seek to hire to address increased inspection frequencies for permitted facilities and vacant lots. The Maricopa County Air Quality Department's FY 2007-08 revenue is

approximately \$14.4 million. Additional funding requirements are anticipated from hiring additional inspectors, supervisors, and administrative personnel. The costs associated with increased personnel are detailed in Maricopa County Measures #4 and #8.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 310.01 requirements are administered through a visual inspection program and a permit program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measure(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310, Rule 310.01, and Rule 316 sources; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM_{10} standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310, 310.01, and 316.

9. Increase consistent inspection frequency for permitted sources

2007 ■ Maricopa County indicates that this measure will increase the number of proactive inspections conducted at Rule 310 and Rule 316 permitted facilities as follows:

- Increase inspection frequency to 3 inspections per year (from 1) for dust control permitted sources with sites <10 acres.
- Increase inspection frequency to 8 inspections per year (from 5) for dust control permitted sources with sites ≥ 10 acres.
- Increase inspection frequency to 5 inspections per year (from 4) for nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling sources.

In addition, the Maricopa County Air Quality Department conducts proactive inspections on a nonattainment area-wide basis to determine compliance with all requirements. The Air Quality Department also prioritizes inspections based

on the following factors: complaints received, number of sources, number of NOVs issued, and ambient air monitoring data. For example, when a high risk dust control action forecast is issued by ADEQ or when monitored readings become elevated, inspectors conduct source surveillance beginning in areas of high emission densities and fanning out from there to ensure consistent compliance throughout the nonattainment area.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

Staffing:

January 2008	Hire 9 compliance inspectors, 3 compliance supervisors, 2 permit technicians, and 3 administrative support supervisors for the dust control permit compliance (Rule 310) program
June 2008	Hire 25 compliance inspectors, 1 compliance supervisor, 4 permit technicians for the dust control permit compliance (Rule 310) program
June 2008	Hire 5 compliance inspectors to inspect Rule 316 sources (nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling sources)

Rule 280:

Aug-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310

(Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and most Rule 316 (Nonmetallic Mineral Processing) sources. Currently, the Dust Compliance Division has 1 division manager and the following level of personnel for the dust control permit compliance program (Rule 310).

Position	Dust Control Permit Compliance (Rule 310) Personnel
AQ Inspector Supervisor	5
AQ Inspector	20
Administrative Support	3
Total	28

The Maricopa County Air Quality Department will seek approval to hire the following personnel to address increased inspection frequency for permitted facilities:

- 34 additional dust control permit compliance inspectors, 4 compliance supervisors, 6 permit technicians, and 3 administrative support supervisors.
- 5 compliance inspectors to inspect nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling facilities.

The Air Quality Department's Air Quality Enforcement Division has 1 division manager, 5 enforcement officers, and 1 administrative support personnel. The Department will seek to hire 5 additional enforcement officers.

The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs associated with increased personnel are listed below:

- Additional dust control permit compliance personnel=\$2.8 million
- Additional compliance inspectors for nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling= \$373,000
- Additional enforcement officers=\$406,000

Maricopa County will evaluate revenues and expenditures anticipated to meet the Five Percent Plan commitments and will propose an increase in fees or additional resources by December 2007, if necessary. Maricopa County Measure #4 describes existing and new dust control vacant lot compliance personnel the Air Quality Department will seek to hire.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Maricopa County Measure #4 describes the enforcement program for Rule 310.01. In addition, Air Quality Department inspectors conduct surveillance of fugitive dust sources in the county on days that are deemed high risk for PM₁₀. Sources observed violating the PM₁₀ standards will be issued notices of violation.

The Air Quality Department tracks the number of dust control permits and the number of nonmetallic mineral processing (Rule 316) sources; the number of dust control permit compliance (Rule 310) and nonmetallic mineral processing (Rule 316) inspections; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316. Maricopa County Measure #4 describes the Air Quality Department monitoring program for Rule 310.01.

10. Increase number of proactive consistent inspections in areas of highest PM-10 emissions densities

2007 ■ Maricopa County indicates that this measure will increase the number of proactive inspections conducted at Rule 310 and Rule 316 permitted facilities as follows:

- Increase inspection frequency to 3 inspections per year (from 1) for dust control permitted sources with sites <10 acres.
- Increase inspection frequency to 8 inspections per year (from 5) for dust control permitted sources with sites ≥10 acres.
- Increase inspection frequency to 5 inspections per year (from 4) for nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling sources.

In addition, the Maricopa County Air Quality Department conducts proactive inspections on a nonattainment area-wide basis to determine compliance with all requirements. The Air Quality Department also prioritizes inspections based on the following factors: complaints received, number of sources, number of NOV's issued, and ambient air monitoring data. For example, when a high risk dust control action forecast is issued by ADEQ or when monitored readings become elevated, inspectors conduct source surveillance beginning in areas of high emission densities and fanning out from there to ensure consistent compliance throughout the nonattainment area.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

Staffing:

January 2008	Hire 9 compliance inspectors, 3 compliance supervisors, 2 permit technicians, and 3 administrative support supervisors for the dust control permit compliance (Rule 310) program
June 2008	Hire 25 compliance inspectors, 1 compliance supervisor, and 4 permit technicians for the dust control permit compliance (Rule 310) program
June 2008	Hire 5 compliance inspectors to inspect Rule 316 sources (nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling sources)

Rule 280:

Aug-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions

March 2008

Board consideration of rule revisions

The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and most Rule 316 (Nonmetallic Mineral Processing) sources. Currently, the Dust Compliance Division has 1 division manager and the following level of personnel for the dust control permit compliance program (Rule 310).

Position	Dust Control Permit Compliance (Rule 310) Personnel
AQ Inspector Supervisor	5
AQ Inspector	20
Administrative Support	3
Total	28

The Maricopa County Air Quality Department will seek approval to hire the following personnel to address increased inspection frequency for permitted facilities:

- 34 additional dust control permit compliance inspectors, 4 compliance supervisors, 6 permit technicians, and 3 administrative support supervisors.
- 5 compliance inspectors to inspect nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling facilities.

The Air Quality Department's Air Quality Enforcement Division has 1 division manager, 5 enforcement officers, and 1 administrative support personnel. The Department will seek to hire 5 additional enforcement officers.

The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs associated with increased personnel are listed below:

- Additional dust control permit compliance personnel=\$2.8 million
- Additional compliance inspectors for nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling= \$373,000

- Additional enforcement officers=\$406,000

Maricopa County will evaluate revenues and expenditures anticipated to meet the Five Percent Plan commitments and will propose an increase in fees or additional resources by December 2007, if necessary. Maricopa County Measure #4 describes existing and new dust control vacant lot compliance personnel the Air Quality Department will seek to hire.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Maricopa County Measure #4 describes the enforcement program for Rule 310.01. In addition, Air Quality Department inspectors conduct surveillance of fugitive dust sources in the county on days that are deemed high risk for PM₁₀. Sources observed violating the PM₁₀ standards will be issued notices of violation.

The Air Quality Department tracks the number of dust control permits and the number of nonmetallic mineral processing (Rule 316) sources; the number of dust control permit compliance (Rule 310) and nonmetallic mineral processing (Rule 316) inspections; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316. Maricopa County Measure #4 describes the Air Quality Department monitoring program for Rule 310.01.

11. Notify violators more rapidly to promote immediate compliance

- 2007 ■ Maricopa County indicates that it is standard practice for Maricopa County dust compliance inspectors who observe potential violations (e.g., opacity or trackout levels that are approaching rule limits) to make reasonable efforts to inform a person on-site or call the permit holder. These observations are recorded on the inspection form so that measures can be taken to prevent, reduce, or mitigate dust generation before a violation occurs. Maricopa County will continue to provide this service.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473,

designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

This is an ongoing practice. No change in level of personnel or funding is anticipated for this measure as this is an ongoing practice administered by the Maricopa County Air Quality Department Dust Compliance Division. The Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and the majority of Rule 316 (Nonmetallic Mineral Mining) sources. Maricopa County Measures #4 and #8 describe existing Dust Compliance Division FTEs and new FTEs the Air Quality Department will seek to hire to address increased inspection frequencies for permitted facilities and to strengthen enforcement of vacant lots. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Maricopa County Measures #4 and #8 detail the enforcement program for Rule 310, 310.01, and Rule 316 and the Air Quality Department's enforcement options. Maricopa County Measures #4 and #8 detail the Air Quality Department monitoring program for Rule 310, Rule 310.01, and Rule 316.

12. Provide timely notification regarding high pollution days

- 2007 ■ Maricopa County indicates that the County will continue to work with the Arizona Department of Environmental Quality and Valley Metro to provide notifications via media outlets, freeway signs, and agency websites when a High Pollution Advisory or High Pollution Watch is issued by ADEQ. Maricopa County will continue to notify industry, cities, and County departments via email when ADEQ forecasts a high risk level for PM₁₀ and Maricopa County will continue to expand its email distribution list.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

This is an on-going effort. No change in funding is anticipated for this measure. The Air Quality Department will track the number high pollution advisories and high pollution watches issued.

13. Develop a program for subcontractors

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, that a subcontractor who is engaged in dust generating operations at a site that is subject to a permit that is issued by a control officer and that requires control of PM-10 emissions from dust generating operations shall register with the control officer by submitting information in the manner prescribed by the control officer. The control officer shall issue a registration number after payment of the fee authorized under subsection C (A.R.S. § 49-474.06 A.).

S.B. 1552 requires that the subcontractor shall have its registration number readily accessible on site while conducting any dust generating operations. The control officer may establish and assess a fee for the registration required under subsection A based on the total cost of processing the registration and issuance of a registration number (A.R.S. § 49-474.06 B. and C.).

- 2007 ■ Maricopa County indicates that this measure involves establishing a subcontractor registration program which includes issuance of registration number and assessment of a registration fee.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.06 authorizes the County to establish a subcontractor registration program and assess a registration fee.

Implementation Schedule:

Rule 200 revisions:

April 2007-Sept. 2007

Draft rule revisions and conduct stakeholder workshops

December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions
Rule 280 revisions:	
August 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions
Database Development:	
March 2008	Database Development
Staffing:	
December 2007	Hire 4 permit technicians to administer the subcontractor registration program.

The Maricopa County Air Quality Department Dust Compliance Division will administer the subcontractor registration program. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program (Rule 310) is contained in Maricopa County Measure #8. Specific to the subcontractor registration program, the Air Quality Department will seek approval to hire 4 permit technicians to administer the subcontractor registration program. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Start-up costs for database development are estimated to be \$88,000. Annual costs associated with 4 additional permit technicians and database maintenance are estimated to be \$232,000.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department will track the number of subcontractors registered and notices of violations issued to subcontractors.

14. Reduce dragout and trackout emissions from nonpermitted sources

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will update Rule 310.01 and may include the following provisions:

- Trackout provisions for nonpermitted sources
- Lower the threshold (vehicles per day) and specify criteria that trigger the requirement to pave or stabilize public dirt roads.
- Reasonable written notice to the owner that the unpaved disturbed surface of a vacant lot is required to be stabilized. Authority for the county to enter the lot to stabilize the disturbed surface at the expense of the owner if the vacant lot has not been stabilized by the day set for compliance. Methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for a violation of this section. [Senate Bill 1552 A.R.S. § 49-474.01 (A)(11)]
- Property line provisions for nonpermitted sources.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 474.01(A)(11) requires adoption of rule provisions by March 31, 2008, and enforcement of the provisions by October 1, 2008, regarding stabilization of disturbed surfaces of vacant lots that include written notice to the owner that a vacant lot is required to be stabilized, authority for the county to enter the lot to stabilize at the expense of the owner, methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for violations.

Implementation Schedule:

Rule 310.01 Revisions:

April 2007 - Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions

No change in level of personnel or funding is anticipated for rule development activities. Maricopa County Measure #4 describes existing and new dust control vacant lot personnel the Air Quality Department will seek to hire to address increased enforcement of Rule 310.01 for vacant lots. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measure(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Senate Bill 1552 authorized the county to enter the lot to stabilize the disturbed surface, issue notices of violation, and collect monetary penalties that include the cost of stabilization. The Air Quality Department tracks the number of vacant lot inspections, number of enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310.01.

15. Cover loads/haul trucks in Apache Junction

2007 ■ City of Apache Junction indicates that an ordinance will be drafted and considered to require the covering of all loaded and empty haul trucks within the City of Apache Junction. This measure will be implemented by the City of Apache Junction. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation schedule is:

1. September 5, 2007- Prepare draft ordinance.
2. September 17, 2007- City Council consideration of ordinance for adoption in work session.
3. October 2, 2007- Public hearing on ordinance and City Council adoption.
4. November 5, 2007- Ordinance implementation.

The estimated cost for the preparation and possible passage of the ordinance leading to the fulfillment of this measure will require a staff time equivalent to

0.10 FTE, at a cost of \$8,000. This will be accomplished by current department personnel under the adopted city budget for FY 07-8. The ongoing cost after ordinance implementation is estimated at \$2,000 and will be accomplished by future operating budgets. This measure will be enforced by ordinance. The enforcement function will be staffed and administered by the Apache Junction Police Department. Implementation of the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. A copy of the ordinance, if passed, will be forwarded to Maricopa County and/or MAG per any progress request.

16. Require dust coordinator at earthmoving sites of 5-50 acres

2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires in a county with a population of two million or more persons or any portion of a county in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, that no later than June 30, 2008, the permittee for any site of five acres or more of disturbed surface area subject to a permit issued by a control officer requiring control of PM-10 emissions from dust generating operations shall have on site at least one dust control coordinator trained in accordance with this section at all times during primary dust generating operations related to the purposes for which the dust control permit was obtained (A.R.S. § 49-474.05 A. and E.).

A dust control coordinator has full authority to ensure that dust control measures are implemented on site, including conducting inspections, deployment of dust suppression resources and modification or shutdown of activities as needed to control dust. The dust control coordinator shall be responsible for managing dust prevention and dust control on the site (A.R.S. § 49-474.05 F.).

At least once every three years, the dust control coordinator shall successfully complete a comprehensive dust control class conducted or approved under subsection A by the county air pollution control officer with jurisdiction over the site. The dust control coordinator shall have a valid dust training certification identification card readily accessible on site while acting as a dust control coordinator. All persons having successfully completed training during the 2006 and 2007 calendar years are deemed to have satisfied this requirement if the training program completed was conducted or approved by a county air pollution control officer (A.R.S. § 49-474.05 G.).

S.B. 1552 indicates that the requirements of subsections E and F lapse if all of the following apply: 1. The area of the disturbed surface area is less than five acres. 2. The previously disturbed areas are stabilized in accordance with the requirements of applicable rules. 3. The permittee provides notice of the acreage stabilized to the control officer (A.R.S. § 49-474.05 I.).

Permittees who are required to obtain a single permit for multiple noncontiguous sites that is issued by a control officer and that requires control of PM-10 emissions from dust generating operations shall have on sites with greater than one acre of disturbed surface area at least one individual who is designated by the permittee as a dust control coordinator trained in accordance with subsection C. The dust control coordinator shall be present on site at all times during primary dust generating activities that are related to the purposes for which the permit was obtained. This subsection does not apply to permittees subject to subsection B and C. (A.R.S. § 49-474.05 J.).

- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will revise Rule 310 and Rule 316 and may incorporate the following provisions:

Proposed Rule 310 revisions:

- Require the permittee for any site of 5 acres or more subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Dust Control Coordinator trained at all times during primary dust generating operations. The Dust Control Coordinator has full authority to ensure that dust control measures are implemented on site. The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.
- Require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.
- Require barriers in addition to stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.
- Require immediate cleanup of trackout at ≥25 feet.
- No visible emissions across the property line.

Proposed Rule 316 revisions:

- Require the permittee for any site of 5 acres or more of disturbed surface area subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Fugitive Dust Control Technician trained at all times during primary dust generating operations. The Fugitive Dust Control Technician has full authority to ensure that dust control measures are implemented on site. The Fugitive Dust Control Technician shall be responsible for managing dust prevention and dust control on the site.

- Specify requirements for operation of watering systems.

In addition, the Maricopa County Air Quality Department will evaluate the method of data reduction for opacity observations and may revise Rule 310 and Rule 316 as needed.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 (E) established requirements for a Dust Control Coordinator and training programs for the suppression of PM₁₀ emissions from sources of PM₁₀.

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

Rule 316 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources. A detailed description of the Dust Compliance Division level of personnel for the

dust control permit compliance program is contained in Maricopa County Measure #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310 and Rule 316 sources; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM_{10} standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316.

17. Fully Implement Rule 316

- 2007 ■ Maricopa County indicates that the Rule 316 litigation was settled on June 20, 2007. As a result, the June 8, 2005, version of Rule 316 was in place as of the settlement date. Maricopa County will enforce the provisions of Rule 316 for nonmetallic mineral processing sources of PM_{10} .

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

June 20, 2007 Rule 316 litigation settled. The June 8, 2005, version of Rule 316 is in place and enforceable.

Maricopa County Measure #8 contains a detailed description of level of personnel and funding for Rule 316. The Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and

activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of nonmetallic processing permits, Rule 316 inspections, enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate this program.

18. Ban or discourage use of leaf blowers on high pollution advisory days

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a city or town in Area A, beginning on March 31, 2008, on any high pollution advisory day forecast by the Department of Environmental Quality to prohibit employees or contractors of that city or town from operating leaf blowers except while in vacuum mode and prohibit those employees or contractors from blowing landscape debris into public roadways at any time (A.R.S. § 9-500.04 A.5.(a).).

S.B. 1552 requires any county that contains any portion of Area A, beginning on the effective date of this section, to prohibit employees or contractors of that county from operating leaf blowers on any high pollution advisory day forecast by the Department of Environmental Quality except while in vacuum mode and prohibit those employees or contractors from blowing landscape debris into public roadways at any time (A.R.S. § 11-877 A.1.).

S.B. 1552 exempts any site that has a permit issued by a control officer for the control of fugitive dust from dust generating operations (A.R.S. §§ 9-500.04 H. and 11-877 B.).

- 2007 ■ Town of Gilbert indicates that the Town prohibits the use of leaf blowers by Town employees or contractors on high pollution advisory days. The Town distributes high pollution advisory notifications so that employees can take appropriate actions including prohibiting the use of leaf blowers and other dust generating activities. Also, see Public Outreach Measure. The Maricopa County Bring Back the Blue campaign includes tips to reduce dust from leaf blowers.

Implementing Agency and Authority for Implementation are as follows:

Town of Gilbert, Community Services Department
Town of Gilbert, Town Managers Office
Town of Gilbert, Risk Management
A.R.S., Section 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers

Restricted use of leaf blowers by Town staff and contractors does not require additional staff or resources. Outreach is addressed in the Public Outreach

Measure. The Town Managers Office and Risk Management coordinate the outreach efforts. The Environmental Coordinator trains appropriate employees on the proper use of leaf blowers. Field Staff supervisors are responsible for oversight of leaf blower use by Town staff. Landscape maintenance contractors are required by the terms of their contracts with the Town to abide by the policy. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ The City of Phoenix indicates that the City has restricted the use of leaf blowers for routine landscape and other maintenance activities on City property. Leaf blowers are only used for unique applications such as skateboard parks, or difficult maintenance applications. The dust control training for City staff will be expanded to include instruction on the restricted use of leaf blowers by employees and contractors. The training will also help ensure that at those limited times when leaf blowers are used, the debris shall not be blown into the streets. The City distributes High Pollution Advisory notifications so that employees can take appropriate action including prohibiting the use of leaf blowers and other dust generating activities. Also, see Public Outreach (MAG reference #22). The Maricopa County Bring Back the Blue campaign includes tips to reduce dust from leaf blowers.

Implementing Agency or City Department:

City of Phoenix, Parks and Recreation Department
Office of Environmental Programs
Other City Departments as necessary

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights, and
Liabilities

Restricted use of leaf blowers by City staff does not require additional staff or resources. Outreach is addressed in another measure. The Office of Environmental Programs coordinates the outreach efforts and trains appropriate employees on the proper use of leaf blowers. Field staff supervisors are responsible for oversight of leaf blower use by City staff and landscape maintenance contractors. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Surprise indicates that beginning March 31, 2008 the City of Surprise, on any high pollution advisory day forecast by the Department of Environmental Quality, will prohibit employees or contractors of that city or town from operating leaf blowers except while in vacuum mode and prohibit those employees or contractors from blowing landscape debris into public roadways at any time. Further, the City no later than March 31, 2008, will adopt, implement and enforce an ordinance that bans the blowing of landscape debris into public roadways at any time by any person. City Community Recreation Services Department, other City Departments as necessary are responsible for implementation. Restricted use of leaf blowers by City staff or contracted employees does not require additional staff or resources. Field staff supervisors are responsible for oversight of leaf blower use by City staff and landscape maintenance contractors. The City will submit progress reports to State and/or County agencies upon request.
- 2007 ■ Maricopa County indicates that this measure would restrict or prohibit the use of leaf blowers on days when the Arizona Department of Environmental Quality (ADEQ) issued a High Pollution Advisory (HPA). Maricopa County Facilities Management Department will insert a provision into bid specifications for landscape maintenance prohibiting the use of leaf blowers on any high pollution advisory day forecast by ADEQ while in vacuum mode and prohibit those contractors from blowing landscape debris into public roadways at any time.

Responsible Agency and Authority for Implementation:

- A.R.S. § 11-251 (General Powers of Board Supervisors)
- A.R.S. § 11-201(A), (County contracting authority)
- A.R.S. § 11-877 (Air quality control measures)

Current contracts for landscape maintenance contain requirements prohibiting use of leaf blowers on HPA days. Existing contracts will be amended to reflect the prohibition of blowing of debris into public roadways. Contractors must agree to contract change and we do not believe there will be financial impact but uncertain until contract change has been agreed to. Contract changes should take approximately 90 days. Ongoing program funded through existing County budget. No change in funding is anticipated. Contract oversight will be provided by the Maricopa County Facilities Management Department and user agencies. Quality Assurance inspectors monitor the contractor on the job. Fines may be assessed for noncompliance with contract specifications. Maricopa County Facilities Management Department will submit annual compliance reports to the Maricopa County Air Quality Department as requested.

19. Reduce off-road vehicle use in areas with high off-road vehicle activity-impoundment or confiscation of vehicles for repeat violations

2007 ■ Arizona Legislature passed S.B.1552 in 2007 which requires a city or town in Area A, no later than March 31, 2008 to adopt, implement and enforce an ordinance that prohibits the operation of any vehicle, including an off-highway vehicle, an all-terrain vehicle, or an off-road recreational motor vehicle, on an unpaved surface that is not a public or private road, street or lawful easement and that is closed by the landowner by rule or regulation of a federal agency, this state, a county or a municipality or by proper posting if the land is private land. This section does not apply to the operation of vehicles used in the normal course of business or the normal course of government operations (A.R.S. § 9-500.27 A. and B.).

S.B. 1552 indicates that this section does not prohibit or preempt the enforcement of any similar ordinance that is adopted by a city or town in Area A, before March 31, 2008 for the purposes of dust abatement (A.R.S. § 9-500.27 C.).

S.B. 1552 specifies that any person who violates an ordinance adopted pursuant to subsection A of this section is guilty of a Class 3 misdemeanor. In addition to or in lieu of a fine pursuant to this section, a judge may order the person to perform at least eight but not more than twenty-four hours of community restitution or to complete an approved safety course related to the off-highway operation of motor vehicles, or both (A.R.S. § 9-500.27 D. and E.).

2007 ■ City of Apache Junction indicates that this measure will include the review and analysis of existing ordinances and actions already in place to prevent or discourage off-road vehicle use within the city limits of the City of Apache Junction. Changes may include amending and/or repealing existing ordinances or the adoption of a new ordinance for more efficient enforcement, prevention and discouragement of off-road vehicle use in vacant private or public properties. This measure will be implemented by the City of Apache Junction. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation schedule is:

1. December 3, 2007- Complete review of existing ordinance and activities.
2. January 2, 2008- Prepare draft ordinance(s).
3. February 2008- City Council consideration of ordinance(s) for adoption/revisions.

4. March 2008- Public hearing on ordinance(s) and possible City Council adoption.
5. May 2008- Implementation of new/revised ordinance(s).

The estimated cost for the review of existing ordinances, actions, and preparation and possible passage of new/revised ordinance(s) leading to the fulfillment of this measure will require a staff time equivalent to 0.15 FTE, at a cost of \$12,000. This will be accomplished by current department personnel under the adopted city budget for FY 07-08. The ongoing cost after possible ordinance implementation is estimated at \$2,000 and will be accomplished by future operating budgets. This measure will be enforced by ordinance. The enforcement function will be staffed and administered by Apache Junction Code Compliance and the Apache Junction Police Department. Implementation of the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. A copy of the ordinance(s), if passed, will be forwarded to Maricopa County and/or MAG per any progress request.

2007 ■ City of Avondale indicates that this measure would involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Avondale City Charter. Avondale commits to drafting and presenting to Council no later than March 31, 2008, an ordinance that will address the dust created by the use of motorized vehicles in the river-bed areas within the City of Avondale. Currently, the City of Avondale Police Department has been working with the County Sheriff's Office in an effort to limit vehicle access to the river-bed areas and issue citations pursuant to Arizona Trespassing Statutes. Funding for the implementation of this measure is determined in the city's annual budgeting process. If the ordinance is approved by Council, the Avondale Police Department will enforce the measure and work with the Maricopa County Sheriff's Department when appropriate to enforce Arizona State Statutes. If the ordinance is approved by Council, on an annual basis, the Avondale Police Department will determine the effectiveness of the regulation and continue in restricting off-road vehicle access to the river-beds. The City will prepare and submit progress reports when requested by outside agencies. A copy of the ordinance, if adopted, will be forwarded to the Maricopa Association of Governments.

2007 ■ Town of Buckeye indicates that an ordinance will be drafted and considered to prevent or discourage the off-road use of vehicles within the PM-10 nonattainment area. This measure will be implemented by the Town of Buckeye Police Department. The legal authority for this action is provided under Arizona

Statutes Sections 9-240(B)(3), (5)(c), (14), and 9-462.01. The implementation schedule is:

1. August 1, 2007- Coordination Meeting
2. October 1, 2007- Draft Ordinance Completed
3. October 16, 2007- Council Workshop
4. January 8, 2008- Public Hearing on Ordinance
5. February 5, 2008- Council Considers Ordinance for Adoption
6. July 1, 2008- Ordinance Implementation

An equivalent of one full-time employee will be required to work with the affected departments to draft the ordinance. The estimated cost to prepare the draft ordinance and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft ordinance and support leading to adoption will be performed by current department personnel consistent with the 2007/2008 fiscal year budget. This measure will be enforced by ordinance. The enforcement function is anticipated to be staffed and administered by the Police Department. The Police Department will provide information documenting progress in implementing the measure as a part of the quarterly report to the Town Manager. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree indicates that Carefree does not have any areas with high off-road vehicle activity. However, the Town had adopted an ordinance that makes it unlawful to operate an all terrain vehicle in a manner that causes excessive dust, and unlawful for any person to operate any motor vehicle on private property without the property owner's written permission. The Town of Carefree is responsible for enforcing the ordinance. The ordinance has been adopted. The Town of Carefree contracts with the Maricopa County Sheriff's Office for law enforcement services. The Town of Carefree budgets funds annually for the cost of the contract. The Town of Carefree and the Maricopa County Sheriff's Office both have complaint resolving procedures which are monitored by the Town Marshal and the Sheriff's District Commander. A copy of Section 6-2-5 (A) and (B) of the Carefree Code of Ordinances is attached to the resolution.

- 2007 ■ Town of Cave Creek has adopted an ordinance that makes it unlawful for any person to operate any motor vehicle on private property without the property owner's express permission. The Town of Cave Creek has also adopted an ordinance that restricts all motorized vehicles to designated parking areas and roadways within any park, recreational area, playground, and open space area. The Town of Cave Creek is responsible for enforcing its ordinances. The ordinance have been adopted. The Town of Cave Creek contracts with the Maricopa County Sheriff's Office and Town Marshal's Office for law enforcement services. The Town of Cave Creek budgets funds annually for the costs of these contracts. The Town of Cave Creek and the Maricopa County Sheriff's Office both have complaint resolving procedures which are monitored by the Town Marshal's Office and the Sheriff's District Commander. Chapter 71.16.A and Chapter 94-02.F O2006-02 of the Town Code.
- 2007 ■ City of Chandler indicates that the existing City Code provisions prohibit use of off-road vehicles on unimproved surfaces that generate emissions of PM-10. Legal authority for this action is provided under A.R.S. Section 9-240 General Powers of Common Council, Section 1.03, Charter of the City of Chandler and Sections 12-3.1 and 12-3.2 Code of City of Chandler. The City of Chandler through the Police Department is currently enforcing this ordinance as part of their normal duties. The Chief of Police will designate a project manager to track implementation of this measure. This measure is currently being enforced. Enforcement of the ordinance is currently part of the normal enforcement duties of the Police Department and is included in current budgets. This measure is enforced by the Police Department with the support of the Neighborhood Resources Division. Progress of enforcement will be presented in metrics as number of citations issued for violations. The Police Project Manager will report these metrics to the City Manager's Office on an annual basis. The City Manager will forward reports to Maricopa County within 30 days of the end of the Fiscal Year. Maricopa County will report reasonable further progress to the U.S. Environmental Protection Agency. A copy of the applicable Code Sections is attached to the resolution. No Code changes are required to implement this measure.
- 2007 ■ City of El Mirage indicates that this measure would involve development and enforcement of ordinances to prevent or discourage off-road vehicle use in the PM-10 nonattainment area. The City will create an ordinance which will prohibit any person to operate or drive any motor vehicle, motorcycle, mini-bike, dune buggy, all terrain vehicles (ATV), motor scooter, or other form of transportation on private and/or public property that is not held open to the public. City of El Mirage Community Development Department will develop an ordinance and the enforcement to be approved by council to prevent off-road vehicle use in the PM-10 nonattainment area. A.R.S., Section 9-240: General Power of Council. Presentation of ordinance to Council March 2008 for discussion and action. Funding for enforcement is included in the annual operating budget for the

departments listed above and is not listed as a separate budget allocation. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Fountain Hills indicates that this measure would involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council. Code enforcement will monitor the annexed 2 square miles and note violations that may occur from July 1, 2007 to June 30, 2008. If a problem is noted, code revisions will be taken to Town Council. The code enforcement staff will monitor the area during the normal course of the day. Funding for the implementation of this measure is determined in the Town's annual budget process. This measure will be enforced by the Planning and Zoning Department and Maricopa County Sheriff's Office (MCSO). Town staff will track the number and type of calls received regarding dust issues to determine the effectiveness of the Town Code. The Town will submit progress reports when requested by outside agencies.

2007 ■ Town of Gilbert indicates that the Town regulates trespassing and off-road vehicle use by making it illegal to use any motor vehicle on unpaved or non-dust-proofed property without possession of written permission of the property owner. The Town's regulation of trespass and off-road vehicle use are based on the following Town Codes and Policies:

Town of Gilbert Code 62-5, Operating or driving; owner's permission required. It shall be unlawful to operate or drive any motor vehicle, motorcycle, minibike, trail bike, dune buggy, motor scooter or other form of transportation propelled by an internal combustion engine on or across the property of another if that property is not paved or dust-proofed in accordance with the standards adopted by the department of public works and without the written permission of the property owner or the person entitled to immediate possession thereof or the authorized agent of either in the operator's possession.

Town Property: The Town of Gilbert owns properties acquired for future parks or other facilities, safety condemnations, and other such uses. Periodic inspections are conducted by the Environmental Programs Coordinator, Community Services, or the department who maintains the property, to ensure the properties are stabilized in compliance with Maricopa County Rule 310.01. Stabilization methods include heavy watering, rock products, chemical stabilizers, and other approved stabilization methods. In addition, access is controlled with signs, berms, fencing, bollards, boulders, or other methods as necessary.

The Implementation Agency and Authority for Implementation are as follows:

Town of Gilbert, Code Compliance Department
Town of Gilbert, Police Department
Town of Gilbert, Community Services Department
Town of Gilbert, Risk Management Department
Town of Gilbert, Public Works Department
A.R.S., Sections 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers
Code of Gilbert Arizona, Section 62-5: Traffic and Vehicles

Ongoing implementation. Funding for enforcement is included in the annual operating budget for the departments listed above. Gilbert Police Department is the primary enforcer of Town Code 62-5. Other departments listed above work in conjunction with the Police Department to control trespassing and off-road vehicle use. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Glendale indicates that this measure would involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council and the Glendale Charter. Glendale is already effectively controlling off-road vehicle use. The City has restricted vehicular and high off-road vehicular access to the 4 miles of riverbeds located within its incorporated area. Access to riverbeds is controlled by signage, gates, barriers and/or other structural controls. This measure has already been implemented. The City will enforce against trespassing. On an annual basis, the Environmental Resources Department will determine the effectiveness of the controls and continue in restricting off-road vehicle access to the riverbeds. The City will prepare and submit progress reports when requested by outside agencies.
- 2007 ■ City of Goodyear indicates that the City currently enforces the prevention of off-road vehicle use in high areas of off-road vehicle use. The City adopted Ordinance 2006-981 adding section 11-1-24 to the City Code prohibiting the operation of motorized vehicles on private land without the written permission of the property owner on February 13, 2006. This measure will be implemented by the City of Goodyear Police Department as required by City Code 11-1-24, A.R.S. § 37-501. The City of Goodyear is currently providing education and enforcement of trespass regarding the illegal use of off-road vehicles on private lands and washes. The City of Goodyear started their education/enforcement program in February 2006. The City of Goodyear Police Department will continue to enforce trespass of off-road vehicle use in washes and private lands

and distribute educational materials regarding City Ordinance 2006-981. Gila River access points are signed, protected by controls, barriers and enforced. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Guadalupe indicates that the building inspector along with law enforcement officers will monitor off-road vehicle activity during the day and night. Data will be gathered from July 1, 2007 to July 1, 2008 to determine whether there is a problem and what additional enforcement action will be implemented. MAG will be notified of the implementation plan. The Town of Guadalupe building department and law enforcement through the authority granted to them by A.R.S. Section 9-240 is responsible for implementation. Monitoring will begin on July 1, 2007 and continue to July 1, 2008. If problem areas are identified, a recommended course of action/implementation schedule will be submitted to the Town Council no later than December 31, 2008. MAG will then be advised of the approved course of action. The building inspector and police officers will monitor any off-road vehicular activity. If a need is identified, the recommended course of action may include the implementation of an enforcement program. MAG will be notified of any applicable actions undertaken by the Town. The Town will submit progress reports to State and/or County agencies showing the number of incidents reported or observed.
- 2007 ■ City of Litchfield Park indicates that the Code Enforcement staff will monitor off-road vehicle activity during the normal course of their daily work. Data will be gathered from August 1, 2007 to July 1, 2008 to determine whether there is a problem and enforcement measures need to be implemented. The identification of any problem areas and the recommended course of action will be submitted to Council for approval and implementation. MAG will be notified of the implementation plan following Council's approval. The City of Litchfield Park Public Works Department, and Code Enforcement staff through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. Monitoring will begin August 1, 2007 and continue to July 1, 2008. If problem areas are identified, a recommended course of action/implementation schedule will be submitted to Council no later than September 30, 2008. MAG will be notified of the approved course of action. Existing personnel in the Code Enforcement and Public Works Department will monitor any off-road vehicular activity. If a need is identified, the recommended course of action may include the implementation of an enforcement program. MAG will be notified of any applicable actions undertaken by the City. Public Works staff will monitor City-owned property. Code Enforcement personnel will respond to complaints as they are received.
- 2007 ■ City of Mesa indicates that the City's regulation of trespass and off-road vehicle usage is based upon the City Codes and Policies discussed below.
- Particulate Pollution Ordinance: City of Mesa Code 8-2-4 (D) requires

that no person shall cause, suffer, or allow a vacant parcel or an urban or suburban area to be driven over or used by motor vehicles or off-road vehicles without first implementing control measures to effectively prevent or minimize fugitive dust.

- City Property: The City of Mesa owns properties that are acquired for future uses. Periodic inspections are conducted to ensure the properties are stabilized in compliance with Maricopa County Rule 310.01. Access to these properties is controlled with signs, berms, fencing, or other methods as necessary.
- Trespass Enforcement: The City of Mesa has a trespass enforcement program that allows property owners to place "No Trespassing" signs on their property and submit a letter to the City of Mesa Police Department that gives them the authority to enforce trespass violations on their property. In addition, the Police Department has coordinated with the Tonto National Forest, Mesa Ranger District and the Arizona Trail Riders on public outreach efforts on recreational and motor vehicle use in desert areas.

Environmental Programs has one full time staff person who will focus inspection efforts on dust generating activities (unpaved parking lots, construction and vacant parcels). Additionally, there are two full time Environmental Specialists and a Division Administrator who are authorized to support the particulate pollution program including conducting inspections and initiating enforcement actions. Environmental Programs inspects City owned lots monthly and responds to complaints regarding trespass on City property by off-road vehicles. The City of Mesa Police Department actively enforces trespass on properties after a reasonable request to leave has been made. A reasonable request can be made in person by the property owner or by posting a "NO TRESPASSING" sign on the property. Arizona Revised Statute, Section 9-240: General Powers of Councils. Mesa City Charter, Article I-Powers of the City. Mesa City Code 8-2-4 (D). Arizona Revised Statute, Section 13-1502: Criminal Trespass.

Implementation will be ongoing. Funding is allocated through the annual budget process to fund staff positions in Environmental Programs and the Police Department. The Environmental Programs Division conducts proactive inspections of City owned vacant lots approximately monthly. The Police Department generally enforces trespass violations on a complaint basis. Arizona Revised Statute, Section 49-406, grants Maricopa County and the ADEQ the authority to enforce measures defines in the Nonattainment Area Plans. The City of Mesa will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Paradise Valley indicates that the Town has no areas with high off-road vehicle activity. In conjunction with two other measures, the Town commits to drafting and considering an ordinance requiring owners of vacant lots in excess of five acres to ditch and berm the perimeter of the property to prevent vehicular access. This measure would apply to approximately 30 properties. The proposed ordinance would also require owners of vacant lots less than five acres to erect a fence or other barrier consistent with zoning regulations if more than one complaint is received about unauthorized vehicular access on the property. This measure will be implemented by the Town of Paradise Valley Planning and Building Department. Legal authority for this action is provided under A.R.S. § 9-240. The draft schedule for completing this works is as follows:

1. September 28, 2007- Draft ordinance completed
2. October 25, 2007- Town Council work session to receive briefing from staff, discuss, and provide feedback
3. November 15, 2007- Town Council considers ordinance for adoption
4. January 1, 2008- Ordinance implementation and enforcement

Preparation of the draft ordinance and staff support leading to adoption will be accomplished by current department personnel under the adopted budget for FY 2008. Administration and implementation of the measure will be conducted by current departmental personnel and included as part of the departmental personnel budget for future fiscal years. This measure will be enforced by ordinance. The enforcement function will be staffed and administered under the Planning & Building Department. The Paradise Valley Police Department will enforce the measure during non-business hours. The Town will submit progress reports to State and/or County agencies upon request. A copy of the ordinance, if adopted, will be forwarded to the Maricopa Association of Governments.

2007 ■ City of Peoria indicates that the City currently enforces the prevention of off-road vehicle use in PM-10 nonattainment areas. The City of Peoria Police Department is responsible for implementation of the measure as required by City Code 13-25, State Trust Land; A.R.S. § 37-501; and Maricopa County owned Land, and other similar government owned lands, City Code 13-1503. The City of Peoria is currently providing an education program, and issuing citations to individuals, regarding the illegal use of off-road vehicles on private lands and washes. The City of Peoria started the education/enforcement in April 2007. The current All Terrain Vehicle (ATV) enforcement activity is provided by two Police Officers, and it is anticipated that it will take approximately eight hours per week for enforcement. The City of Peoria started enforcement of the ATV restriction in April 2007. The City will track the number of violators and/or

confiscation, based on this program. A summary of the property will be submitted to Maricopa County.

2007 ■ City of Phoenix indicates that the City's regulation of trespass and off-road vehicle use are based upon the City Codes discussed below.

- Trespass: Phoenix City Code, Section 23-85 prohibits entering or remaining on any real property after a reasonable request to leave by the property owner, or any other person having lawful control over such property, or a reasonable notice prohibiting entry.
- Vehicle Parking- Traffic Code: Phoenix City Code, Section 36-145 prohibits parking of any motor vehicle on any lot that is not dust-free/dustproof.
- Registered Vacant Lots and Signs: Phoenix City Code, Section 36-148 provides that property owners who have trespassing or parking on their vacant lots can post appropriate signs and register their property with the Police Department for enforcement.
- Vehicles on Vacant Lots-Traffic Code: Phoenix City Code, Section 36-62 requires that no person shall operate a vehicle on or across any portion of a vacant lot other than on an established dustproof driveway.
- City-Owned Washes and Open Space: Phoenix conducts periodic inspections of the City-owned washes, riverbeds, and other open areas to monitor and respond to vehicle trespass and off-road vehicle activity. Signs, berms, barriers, boulders, fencing, bollards and other methods are used to restrict vehicle use as necessary.
- City Parks: Phoenix City Code, Section 24-51 prohibits parking or driving any vehicle in a City park except within the designated parking areas, or other authorized areas. This includes all City parks, mountain preserves, Rio Salado Wetlands, etc.
- Goodyear Ordinance: In response to the Measure Description in the MAG Suggested List of Measures, the City reviewed the "Goodyear Ordinance" and found it to be less stringent than the Phoenix Codes. The Phoenix codes referenced above restrict all vehicle use on vacant areas while the Goodyear Ordinance allows vehicle use with the permission of the property owner.

Implementing Agency or City Department:

City of Phoenix, Parks and Recreation Department
City of Phoenix, Police Department
City of Phoenix, Office of Environmental Programs
Other City Departments as necessary

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights, and
Liabilities

References to Codes & Ordinances:

Phoenix City Code, Section 24-51: Operation & Parking of Vehicles
in Parks
Phoenix City Code, Section 23-85.01: Criminal Trespass
Phoenix City Code, Section 36-62: Operation of Vehicles on
Vacant Lots
Phoenix City Code, Section 36-145: Parking on Non-Dust-Free
Areas
Phoenix City Code, Section 36-148: Parking in Conformance
with Zoning Ordinance

Implementation is ongoing. Funding for enforcement is included in the annual operating budget for the departments listed above and not listed as a separate budget allocation. The Police Department enforces traffic trespass code. The Police and Parks Recreation Departments each have off-road all-terrain vehicles specifically purchased to help enforce vehicle trespass. The City conducts enforcement of off-road vehicle activities in areas with high off-road vehicle use as problems are identified. Enforcement activities have been conducted in conjunction with the State Land Department, Maricopa County Flood Control District, when trespass occurs on adjoining properties under the control of those jurisdictions. Joint efforts with these, or other agencies, will be conducted in the future as the need arises. The Park and Recreation Department enforces the parking and vehicle use codes for City parks, mountain preserves and other open spaces managed by the department. Inspection and control of other washes, riverbeds, and open spaces is conducted by the department who manages the property with assistance from the Office of Environmental Programs. Signs, berms, barriers, boulders, fencing, bollards and other methods are used to restrict vehicle use as necessary. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans.

The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Queen Creek indicates that the Park Rangers and Code Enforcement staff will monitor off-road vehicle activity during the normal course of their daily work. Data will be gathered from July 1, 2007 to July 1, 2008 to determine whether there is a problem and enforcement measures need to be implemented. The identification of any problem areas and the recommended course of action will be submitted to Council for approval and implementation. MAG will be notified of the implementation plan following Council's approval. The Town of Queen Creek Parks and Recreation Department and Community Development Department, through the authority granted to them by A.R.S. § 9-240. Monitoring will begin on July 1, 2007 and continue to July 1, 2008. If problem areas are identified, a recommended course of action/implementation schedule will be submitted to Council no later than September 30, 2008. MAG will then be advised of the approved course of action. Existing personnel in the Parks and Recreation Department and Community Development Department will monitor any off-road vehicular activity. If a need is identified, recommended course of action may include the implementation of an enforcement program. MAG will be notified of any applicable actions undertaken by the town. Park Rangers patrol Town-owned properties daily. Code Enforcement personnel respond to complaints as they are received.
- 2007 ■ City of Scottsdale indicates that this measure could involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area.
- Public and Private Property: City ordinances prohibit as unlawful vehicle use, including off-road vehicle use, on both public and private property.
 - Unlawful Vehicle Use: Scottsdale City Code, Section 19-14 prohibits operating, driving or leaving a vehicle on any private or public property without the owner's written permission.
 - Temporary/Security Fencing for Vacant Land: Scottsdale Zoning Ordinance, Section 7-700 establishes standards for temporary/security fencing for vacant land and other sites.
 - McDowell Sonoran Preserve: Scottsdale City Code, Section 21-12 prohibits motor vehicle use except in designated parking areas.
 - McDowell Sonoran Preserve: Scottsdale City Code, Section 21-11 defines "designated and posted" as appropriate signs or physical barriers to indicate areas closed to the public.

- City Parks: Scottsdale City Code, Section 17-126 prohibits parking in any city park except within the designated parking areas.

Responsible Agency and Authority for Implementation:

City of Scottsdale, Police Department
 City of Scottsdale, Preservation Division
 City of Scottsdale, Code Enforcement Division
 City of Scottsdale, Parks and Recreation Division

Authority for Implementation:

A.R.S., Section 9-240: General Powers of Council
 Scottsdale City Charter, Article I, Sec. 3: Powers of City
 Scottsdale City Code, Sections 17, 19, 21 various
 Scottsdale Zoning Ordinance, Section 7-700

Ongoing implementation. Funding enforcement is included in the annual operation budget for the departments and divisions listed above and is not listed as a separate budget allocation. The Police Department enforces traffic and unlawful vehicle use codes. The City conducts enforcement of off-road vehicle activities in areas with high off-road vehicle use as problems are identified. Enforcement activities have been conducted within the McDowell Sonoran Preserve (MSP) owned by the city and in cooperation with the State Land Department for State Lands within Scottsdale. The Scottsdale Police Department and preservation Division staff enforce off-road vehicle activities in the MSP jointly. Code Enforcement Division enforces vehicle for sale on unpaved areas prohibitions. Parks and Recreation Division enforces the parking and vehicle use codes for city parks. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Surprise indicates that no later than March 31, 2008, the City of Surprise will adopt, implement and enforce an ordinance that prohibits the operation of any vehicle, including an off-highway vehicle, all-terrain vehicle or an off-road recreational motor vehicle, on an unpaved surface that is not a public or private road, street or lawful easement and that is closed by the landowner by rule or regulation of a federal agency, this state, a county or the City of Surprise or by proper posting if the land is private land. An estimated thirty square miles will be addressed under this measure. City Police Department, City Community Development Department, Code Enforcement Division, City Council will be responsible for implementation. This measure will be adopted, implemented and enforced by March 31, 2008. Funding for enforcement is included in the annual operating budget for the aforementioned departments/divisions and is

not itemized as a separate budget allocation. Once written and implemented the following departments will be responsible for implementation: City Police Department, City Community Development Department, and Code Enforcement Division. The City will submit reports upon request of State and/or County agencies.

- 2007 ■ City of Tolleson indicates that this measure would involve development and enforcement of ordinances or implementation of other actions to prevent or discourage off-road vehicle use in the PM-10 nonattainment area. The Public Works and Building Department “(Code Enforcement)”, through the authority granted to them by A.R.S. § 9-240. Monitoring will begin August 1, 2007 and continue to August 1, 2008. If problem areas are identified, a recommended course of action/implementation schedule will be submitted to Council no later than October 30, 2008. MAG will then be advised of the approved course of action. Funding for the implementation of this measure is determined in the city’s annual budgeting process. If a need is identified, a recommended course of action may include the implementation of an enforcement program. MAG will be notified of any applicable actions undertaken by the City. Public Works and Code Enforcement will patrol these areas with code enforcement personnel responding to complaints as they are received.
- 2007 ■ Town of Youngtown indicates Youngtown aggressively enforces by confiscating offending vehicles and citing drivers. Town residents are astutely aware of this issue and provide notification to the Police Department. “How to Save \$\$\$\$” notice is an effective approach to notifying public. The following Town Departments are responsible for implementation: Police and Code and Compliance. Ongoing implementation. Personnel and funding allocated for implementation in the annual Police Department Budget. The Police Department enforces the program with response to complaints. Activity for enforcement may be found in the Police log.
- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will adopt an ordinance(s) to restrict off-road recreational motor vehicle use on unpaved surfaces and vehicular use and parking on vacant lots. In addition, the Department will coordinate with the Maricopa County Sheriff’s Office to conduct enforcement initiatives which will involve enforcement of ordinances and rules to prevent and discourage off-road vehicle use and trespass on vacant lots. The initiatives will be prioritized based on complaints and in areas with high off-road vehicle and trespass activity.

The Maricopa County Board of Supervisors is authorized by A.R.S. §49-479 to adopt rules for air pollution control and by A.R.S. § 11-251 (43) to adopt and enforce necessary ordinances to regulate off-road recreational motor vehicles that are operated within the county on public lands without lawful authority or on

private lands without the consent of the lawful owner or that generate air pollution.

Implementation Schedule:

Enforcement Initiative:

July - November 2007	Develop procedures and coordinate efforts with other jurisdictions
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January - March 2008	Identify heavy use areas and research parcel ownership. Contact property owners for installation of control measures, 'no trespass' signs, and obtain authority to cite trespassers without owner presence.
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April 2008	Begin enforcement initiatives and outreach
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Ordinances(s);

September 2007	Draft ordinance and conduct stakeholder workshops
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March 2008	Board consideration of ordinance
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No change in level of personnel or funding is anticipated for the ordinance development activities. The Maricopa County Air Quality Department Dust Compliance Division will coordinate with the Maricopa County Sheriff's Office on the enforcement initiatives. Maricopa County Measure #4 describes existing dust control vacant lot personnel and new personnel the Department will seek to hire for the dust control vacant lot program. The Air Quality Department's revenue for the air quality program is estimated to be \$14.4 million. Start-up costs for database development are estimated to be \$133,500. Annual database maintenance costs are estimated to be \$73,300. The enforcement process will be described in the ordinance. The Department anticipates that a citation and civil penalty will be issued to off-road recreational vehicle operators and individuals in violation of the ordinance. The Air Quality Department will track the number of enforcement initiatives and the number of citations issued.

20. Provide incentives to retrofit nonroad diesel engines and encourage early replacements with advanced technologies

2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a county with a population of more than four hundred thousand persons to operate and administer a voluntary diesel emissions retrofit program in the county for the

purpose of reducing particulate emissions from diesel equipment. The program shall provide for real and quantifiable emissions reductions based on actual emissions reductions by an amount greater than that already required by applicable law, rule, permit or order and computed based on the percentage emissions reductions from the testing of the diesel retrofit equipment prescribed in subsection C as applied to the rated emissions of the engine and using the standard operating hours of the equipment (A.R.S. § 49-474.07 A.).

A person may participate in the program if both of the following apply: 1. The person is the owner of diesel powered equipment that requires a permit issued pursuant to this article for lawful operation. 2. The person reports to the control officer on the type of equipment that is retrofitted, provides a method for calculating the emissions reductions achieved that is approved by the control officer and provides evidence that the retrofitted equipment is actually used in a manner that results in lower particulate emissions with no increase in emissions of other pollutants (A.R.S. § 49-474.07 B.).

S.B. 1552 specifies that the voluntary diesel retrofit program shall provide for the following:

1. Each person who participates shall allocate to the air quality emissions reduction inventory for that county one-half of the total particulate emissions reduction achieved through that person's retrofit of diesel equipment operating at the permitted site whether or not that equipment is required to have a permit.
2. Each person who participates shall retain one-half of the total particulate emissions reduction achieved through that person's retrofit of equipment at the site for purposes of receiving a modification to an existing permit or a provision in a new permit that allows for extended hours of operation for the permitted equipment, as compared to the existing permit, or for new permits, as compared to permits for similar equipment.
3. The diesel emissions reduction equipment that is retrofitted shall be registered with the Department of Environmental Quality with notice to the applicable county, shall be tested with an ISO 8178 Test by a properly equipped laboratory and shall demonstrate at least a thirty-five percent reduction in particulate pollution with no increase in the generation or emission of other regulated pollutants. This paragraph applies without regard to whether the participant is required to obtain an air quality permit for the equipment.
4. The control officer shall provide a method for determining the participant's eligibility for the program and for the modification of the existing permits or for incorporating this program's provisions into the terms of any applicable

new permits as well as any reporting requirements to ensure continued use of the emission reductions measures (A.R.S. § 49-474.07 C.).

S.B. 1552 indicates that this section does not authorize a permit condition or a modification to a permit condition that would violate a requirement of the Clean Air Act, this chapter or a rule adopted under this chapter, including the national ambient air quality standards. This section does not authorize the use of reductions in mobile source emissions for purposes of determining the applicability of new source review requirements (A.R.S. § 49-474.07 D.).

21. Ban leaf blowers from blowing debris into streets

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires that a city or town in Area A, beginning on March 31, 2008, on any high pollution advisory day, prohibit employees or contractors of that city or town from operating leaf blowers except while in the vacuum mode and prohibit those employees or contractors from blowing landscape debris into public roadways at any time (A.R.S. § 9-500.04 A.5.).

S.B. 1552 requires that a city or town in Area A by March 31, 2008, adopt, implement and enforce an ordinance that bans the blowing of landscape debris into public roadways at any time by any person (A.R.S. § 9-500.04 A.5.).

The bill requires any county that contains any portion of Area A to begin on the effective date of this section, to prohibit employees or contractors of that county from operating leaf blowers on any high pollution advisory day except while in the vacuum mode and prohibit those employees or contractors from blowing landscape debris into public roadways at any time (A.R.S. § 11-877 A.1.).

S.B. 1552 requires any county that contains any portion of Area A by March 31, 2008, to adopt, implement, and enforce an ordinance that bans the blowing of landscape debris into public roadways at any time by any person (A.R.S. § 11-877 A.2.).

S.B. 1552 requires in a county with a population of two million or more persons or any portion of a county within an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, after March 31, 2008, no person may use a leaf blower to blow landscape debris into public roadways (A.R.S. § 49-457.01 B.).

S.B. 1552 exempts any site that has a permit issued by a control officer for the control of fugitive dust from dust generating operations (A.R.S. §§ 9-500.04 H., 11-877 B. and 49-457.01 G.).

- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will adopt, implement, and enforce an ordinance by March 31, 2008, that bans the blowing of landscape debris into public roadways and prohibits the operation of leaf blowers except on surfaces that have been stabilized with asphaltic concrete, cement concrete, hardscape, penetration treatment of bituminous material and seal coat of bituminous binder and mineral aggregate, decomposed granite cover, crushed granite cover, aggregate cover, gravel cover, or grass or other continuous vegetative cover, or any combination of those stabilizers.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 11-877 to adopt, implement and enforce an ordinance that bans the blowing of landscape debris into public roadways and prohibits the operation of leaf blowers on unstabilized surfaces.

Implementation Schedule:

September 2007 Draft ordinance and conduct stakeholder workshops

March 2008 Board consideration of ordinance

Complaints will be handled by Maricopa County Air Quality Department's Dust Compliance Division. This ordinance will be difficult to enforce due to the relatively brief period of time to perform leaf blower activities. The Air Quality Department anticipates utilizing existing Dust Compliance Division staff because of their proximity to the activity in the field. A detailed description of level of personnel and funding for the Dust Compliance Division are contained in Maricopa County Measure #4 and #8.

Leaf blower complaints will be handled by the Air Quality Department's Dust Compliance Division. This is a difficult activity to enforce due to the relatively brief period of time to perform the activity. The Air Quality Department anticipates utilizing existing dust compliance staff because of their proximity to the activity. Dust compliance staff will be in the field doing surveillance as well as educating operators and handing out information brochures. A.R.S. 11-877 infers that the Board can establish penalties for violating the ordinance. In addition, the County's general ordinance authority in A.R.S. § 11-251.05 (A)(2) provides for a fine or imprisonment not to exceed the maximum limitations for a class 1 misdemeanor. The Air Quality Department will track the number of leaf blower related complaints received and the number of enforcement actions.

22. Implement a leaf blower outreach program

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires that in a county with a population of two million or more persons or any portion of a county within

an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, at least once every three years, any person operating a leaf blower for remuneration shall successfully complete training approved by the Department on how to operate a leaf blower in a manner designed to minimize the generation of fugitive dust emissions. Any person who is required to be trained under this subsection shall complete the initial training no later than December 31, 2008 (A.R.S. § 49-457.01 D.).

S.B. 1552 requires that in the above areas any person who rents or sells in the normal course of business equipment that is used for blowing landscape debris shall provide to the buyer or renter of the equipment printed materials that are approved by the Department. The Department of Environmental Quality shall produce printed materials and distribute those materials to persons who sell or rent equipment used for blowing landscape debris. The printed materials shall be designed to educate and inform the user of the equipment on the safe and efficient use of the equipment, including methods for reducing the generation of dust, and shall include information regarding dust control ordinances and restrictions that may be applicable (A.R.S. § 49-457.01 E. and F.).

S.B. 1552 exempts any site that has a permit issued by a control officer for the control of fugitive dust from dust generating operations (A.R.S. § 49-457.01 G.).

23. Ban ATV use on high pollution days

2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires that in Area A, a person shall not operate an off-highway vehicle, an all-terrain vehicle or an off-road recreational motor vehicle on an unpaved surface that is not a public or private road, street or lawful easement during any high pollution advisory day forecast for particulate matter by the Department of Environmental Quality (A.R.S. § 49-457.03 A.).

The bill indicates that this section does not apply to: 1. An event that is intended for off-highway vehicles, all-terrain vehicles or off-road recreational motor vehicles and that is endorsed, authorized, permitted or sponsored by a public agency, that occurs on a designated route or area and that includes dust abatement measures at all staging areas, parking areas and entrances. 2. An event that occurs at a facility for which an admission or user fee is charged and that includes dust abatement measures. 3. A closed course that is maintained with dust abatement measures. 4. An off-highway vehicle, all-terrain vehicle or off-road recreational motor vehicle used in the normal course of business or the normal course of government operations. 5. Golf carts that are used as part of a private or public golf course operation (A.R.S. § 49-457.03 B.).

S.B. 1552 specifies that a person who violates this section is subject to: 1. A warning for the first violation. 2. The imposition of a civil penalty of fifty dollars for the second violation. 3. The imposition of a civil penalty of one hundred dollars for the third violation. 4. The imposition of a civil penalty of two hundred fifty dollars for the fourth or any subsequent violation. For violations of this section, the control officer or other enforcement officer shall use a uniform civil ticket and complaint substantially similar to a uniform traffic ticket and complaint prescribed by the rules of procedure in civil traffic cases adopted by the Supreme Court. The control officer or other enforcement officer may issue citations to persons in violation of this section (A.R.S. § 49-457.03 C. and D.).

24. Sweep street with PM-10 certified street sweepers

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a city or town in Area A, no later than March 31, 2008, to require that new or renewed contracts for street sweeping on city streets must be conducted with street sweepers that meet the South Coast Air Quality Management District Rule 1186 Street Sweeper Certification Specifications for pick-up efficiency and PM-10 emissions in effect on January 1, 2007 (A.R.S. § 9-500.04 A. 9.).

S.B. 1552 requires a county which contains any portion of Area A to require that new or renewed contracts for street sweeping on city streets must be conducted with street sweepers that meet the South Coast Air Quality Management District Rule 1186 Street Sweeper Certification Specifications for pick-up efficiency and PM-10 emissions in effect on January 1, 2007 (A.R.S. § 49-474.01. A. 8.).

- 2007 ■ City of Apache Junction indicates that all of the City's street sweepers are PM-10 certified as part of past PM-10 commitments made in 2004. The City's commitment to this measure will include the continuation of the commitment made in 2004 which includes the annual review and analysis of its sweeper program. Future action will involve looking at achieved frequencies and effectiveness of addressing high target areas. This measure will be implemented by the City of Apache Junction Public Works Department. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation is:

1. Annually- Review and analysis of sweeper program completed by February 1.
2. Annually- Implementation of changes to sweeper program completed by April 1.

The estimated cost for the review and analysis of the existing sweeper program for the fulfillment of this measure will require an additional cost of

\$3,000 per annum. This will be accomplished by current department personnel under adopted city budget for FY 07-08 and future Public Works operating budgets. This measure will be staffed and administered under the Public Works Department. Progress in implementing the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. Documents of the reviews along with any plans will be forwarded to Maricopa County and/or MAG per any progress request.

2007 ■ City of Avondale indicates that this measure would require all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 certified street sweepers. Effective February 2, 2005, the City of Avondale approved Resolution No. 2448-04 developing procedures to reduce re-entrained dust emissions from paved roads that experience a high level of soil deposition. Implementation of this operating procedure increased the City's frequency of sweeping for the designated areas twice a month to once every ten calendar days, a frequency improvement of 100%. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Avondale Charter. Avondale's entire fleet of street sweeper are PM-10 certified. Therefore, Avondale already uses PM-10 certified street sweepers to sweep all public city streets. The city will continue to use PM-10 sweepers to sweep existing public city streets. In the event the city elects to use a private vendor to sweep public city streets, the city shall require the vendor to use PM-10 certified street sweepers. The Field Operations Department is responsive for the city's street sweeping program. Funding for the implementation of this measure is determined in the city's annual budgeting process. The enforcement function will be staffed and administered under the Field Operations Department and will be implemented administratively. The Field Operations Department will prepare the necessary street sweeping plans, vendor requirements, and document progress made in implementing this measure. The city will prepare and submit progress reports, when requested by outside agencies.

2007 ■ Town of Buckeye indicates that this measure would require all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 certified sweepers. This measure will be implemented by the Town of Buckeye Public Works Department. The legal authority for this measure is provided under Arizona Revised Statutes Sections 9-240(A) and (B)(3). Street sweepers purchased by the Town of Buckeye meet the requirements necessary to be PM-10 compliant. Streets maintained by the Town of Buckeye are swept with PM-10 certified street sweepers.

The administration to request proposals for PM-10 certified street sweepers will require one full-time equivalent employee at a cost of approximately \$60,000.00. It is estimated that the cost to prepare the request for proposals, advertise, review the proposals for compliance and award the contract will

require staff equivalent to 0.10 of a full time employee at a cost of \$6,000.00. Operation of the PM-10 certified street sweeper will require staff time of one full-time equivalent employee. This will be accomplished by current department personnel under the Town adopted FY 2007/2008 budget. This measure will be enforced by a purchasing standard. The enforcement function will be staffed and administered under the Public Works Department. The Street Branch of the Public Works Department will provide the number of sweepers in operation as a part of the quarterly report to the Public Works Director. On an annual basis, the Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the purchasing specification will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree contracts for street sweeping, and the contractor uses only PM-10 certified sweepers. The Town of Carefree is responsible for sweeping streets. The Town of Carefree is currently contracting for the use of PM-10 certified street sweepers. The Town of Carefree budgets funds annually for the cost of the contract. The Town of Carefree administers the street sweeping contract. The Town of Carefree monitors the street sweeping program.
- 2007 ■ Town of Cave Creek has a PM-10 certified street sweeper. The Town of Cave Creek is responsible for sweeping its streets. The Town of Cave Creek currently schedules to sweep streets on a regular schedule (once a quarter) as well as when additional needs arise. The Town of Cave Creek budgets annually for the costs of sweeping streets on a regular schedule. The Town of Cave Creek will administer the street sweeping program. The Town of Cave Creek will monitor the local streetsweeping program.
- 2007 ■ City of Chandler will sweep high dust roadway sections, arterial, collector and distribution streets using only PM-10 certified street sweepers. The City of Chandler has eleven (11) street sweepers, all of which are PM-10 Compliant, and most of which have been purchased through the Maricopa County CMAQ grant process. The City has increased the sweeping frequency for nonattainment areas as part of the revised State Implementation Plan for the Phoenix metropolitan area in the manner detailed below. The City's sweeping schedule/commitment is as follows:
- a. Arterial Roadways: Once every two weeks
 - b. Collectors and Residential Streets: Once every month
 - c. Downtown Area: Once per week
 - d. Special Nonattainment Areas (see below)

- e. Airport: Runways, Taxiways, and Parking Aprons are swept at least once every two weeks.

Note: The City airport has one (1) PM-10 certified street sweeper; Streets Division has nine (9) sweepers, and one additional sweeper that will be delivered in June/July of 2007 (total of 11 sweepers).

City of Chandler Resolution No. 3782 Approved by Council on 10-14-2004		
Road Classification	Street Name	From/To
High Dust Arterials ¹	Arizona Avenue	Willis Road to Ryan Road
	Germann Road	Arizona Avenue to McQueen Road
	McQueen Road	Queen Creek Road to Ocotillo Road
	Price Road	Germann Road to the Santan Freeway
	56 th Street	Chandler Boulevard South to City Limits
High Dust Collectors ²	Summit Place	Alma School Road to Dobson Road
	Doral Drive	Lindsay Road to Val Vista Drive
	Hunt Highway	City Limits East of McQueen Road to Val Vista Drive

- Notes: 1. Identified Arterials that are swept three (3) times per month
2. Identified Collectors that are swept two (2) times per month

The City of Chandler is a rapidly growing City and the effort necessary to maintain the above listed schedule is an ever-increasing task. The Public Works Director will identify a Project Manager who will track the progress of this measure.

The City of Chandler through the Public Works Department will perform systematic sweeping of the streets in accordance with the specified schedule. The Public Works Department performs this task under the general legal authority as provided under A.R.S. Section 9-240, General Powers of Common Council and Section 1.03, Charter of the City of Chandler. It is anticipated that an additional street sweeper will be added in FY 2008-09. The sweeper will be a PM-10 certified street sweeper and one additional operator will also be added. Administration and implementation of this measure will require staff time of eleven (11) full time employees and sweeping equipment/sweeping equipment maintenance costs of approximately \$1,500,000 per year. To stay in compliance, it is anticipated that one additional staff member and one additional street sweeper will be added each year starting in FY 2008-09. Street sweepers are anticipated to be purchased in conjunction with CMAQ funding. In other fiscal years the Public Works Department will analyze the need for additional

sweepers as new streets are added to the City's street system. Sweepers will be added as the demand requires to conform to the specified schedule. The Public Works Department will implement the program.

Street sweeping will be tracked by GPS monitoring to verify that sweeping schedules are achieved. The Public Works Director's Project Manager will supply the City Manager with a progress report documenting implementation of the measure annually by the end of the fiscal year. The City Manager will submit a copy of the annual report to Maricopa County within 30 days of the end of the fiscal year. Maricopa County will be responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the applicable Code Sections is attached in the resolution. No Code changes are required to implement this measure.

- 2007 ■ City of El Mirage indicates that this measure would required all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 sweepers. The Street Department currently conducts all routine sweeping of 95 miles of the City's streets with PM-10 certified sweepers. City of El Mirage Public Works Department Street Division. A.R.S., Section 9-240: General Powers of Council. Street sweeping has been ongoing with PM-10 certified sweepers since January 2004. The city purchased a TYMCO International Street Sweeper in 2004 utilizing CMAQ funding with a 5.7% match obligation. In addition the City purchased a Freightliner FL 70 Street Sweeper in 2005 utilizing CMAQ funding with a 5.7% match obligation. Total cost for TYMCO sweeper purchased in 2004 is \$133,424.59; this includes the 5.7% match obligation of the City of \$7,605.20. Total cost for Freightliner FL20 sweeper purchased in 2004 is \$135,425.52; this includes the 5.7% match obligation of the City of \$7,719.25. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The city will submit progress reports to State and/or County agencies upon request.
- 2007 ■ Town of Fountain Hills indicates that gutter sweeps are conducted on all streets quarterly, with full width sweeping annually. Gutters sweeps are conducted on all arterial streets and commercial area collector streets monthly. The Town intends to purchase a second PM-10 certified street sweeper and retire the non-certified PM-10 street sweeper. This measure is being implemented by the Town Public Works Department. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council. The Town has received a grant to purchase a second PM-10 street sweeper. The second PM-10 street sweeper has been ordered and should be delivered by January 2008. This will bring the Town in compliance. In the event that the Town elects to use a private vendor to sweep public Town streets, the Town will require the vendor to use PM-10 certified street sweepers. The Town portion for the purchase of the second PM-10 sweeper is approximately \$25,000. This program is fully funded.

The enforcement function will be staffed and administered by the Public Works Department. The Town Street Department will prepare the necessary street sweeping plans, vendor requirements, and document progress made in implementing this measure. The Town will prepare and submit progress reports when requested by outside agencies.

- 2007 ■ Town of Gilbert indicates that the Town has CMAQ funding available to purchase five PM-10 certified sweepers over the next three years to enhance the ability and frequency of sweeping on arterials to reduce PM-10 particulates on public roads. The Town currently has a fleet of 10 PM-10 certified sweepers of which seven are used for daily routine sweeping. The Public Works Department currently conducts all routine sweeping of Town streets with PM-10 certified sweepers. The Town does not use contract services for routine street sweeping.

The Implementing Agency and Authority for Implementation are as follows:

Town of Gilbert, Public Works Department
A.R.S., Section 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers

Three street sweepers will be purchased in FY07/08 and FY08/09. The Town has an additional two street sweepers available with FY 2007 CMAQ. Total estimated cost for each new sweeper is estimated at \$191,141.34. The starting annual salary for each street sweeper operator is \$60,590. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Glendale indicates that this measure would require all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 certified street sweepers. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council and the Glendale Charter. Glendale is already using PM-10 certified street sweepers to sweep all public city streets. The city will continue to use PM-10 certified street sweepers to sweep existing public city streets. In the event the city elects to use a private vendor to sweep public city streets, the city shall require the vendor to use PM-10 certified street sweepers. The Field Operations Department is responsible for the city's street sweeping program. Funding for the implementation of this measure is determined in the city's annual budgeting process. This measure will be implemented administratively. The Field Operations Department will prepare the necessary street sweeping plans, vendor requirements, and document progress made in implementing this measure. The city will prepare and submit progress reports when requested by outside agencies.

2007 ■ The City of Goodyear indicates that the City currently has all PM-10 certified sweepers in its Fleet and sweeps using the following schedule:

- All high volume arterials, industrial areas and washes are swept once every five days.
- Low volume arterials and collector streets are swept once every three weeks.
- Residential streets are swept once every three weeks.

The City of Goodyear will research and implement the requirement for PM-10 certified sweepers for use during construction activities for construction permits and all track out sites. These items will be addressed in the General Notes for Construction and General Notes for Street Construction. This measure will be implemented by the City of Goodyear Public Works Department for using PM-10 certified street sweepers on public roads and City facilities. The City of Goodyear is currently maintaining the maintenance of facilities through lease agreements and will require PM-10 sweepers be used during these activities. The Engineering Department will hand out informational/educational materials to the private contractors throughout the permitting process to ensure that all construction activities affecting public roadways will be swept with PM-10 certified sweepers by July 2008.

The City of Goodyear Public Works Department has two operators that maintain all public streets. City facilities are maintained through lease agreements that will enforce the use of PM-10 certified sweepers through contracts. For construction activities, the City of Goodyear Engineering project managers and inspectors will enforce the use of PM-10 certified sweepers. The Public Works Department will provide annual reporting of street sweeping activities provided by their fleet. The City of Goodyear currently has four PM-10 street sweepers in its fleet and will be replacing two of its older sweepers in order to meet the new compliance measure and adding a third operator in FY 07-08. The City will continue to replace street sweepers with PM-10 certified street sweepers and acquire additional operators as growth demands them. The Public Works Department will work with the leasing agents in order to ensure that PM-10 certified street sweepers are used to sweep all parking lots under their agreement. The Engineering Department will work with private development on implementing a program to ensure that PM-10 certified sweepers are used during clean up activities. Engineering will research the availability of PM-10 sweepers in the private sector to determine if this program is feasible.

2007 ■ Town of Guadalupe indicates that the Town of Guadalupe Public Works Department will use only PM-10 certified street sweepers to clean roads. The

Town of Guadalupe Public Works Department, through the authority granted to them by A.R.S. Section 9-240 will be responsible for implementation. Regular street sweeping will begin September 1, 2007 and will provide for major arterial streets to be swept every two weeks and residential streets once every six weeks. The Public Works Department has two PM-10 certified street sweepers in the fleet. Operators will obtain the required license by September 1, 2007. The street sweeping program is fully funded.

- 2007 ■ City of Litchfield Park indicates that the city is currently and will continue to use only PM-10 certified street sweepers to clean roads. Contractors retained by the City will also be required to use PM-10 certified street sweepers. The City of Litchfield Park Public Works Department through the authority granted to them by A.R.S. § 9-240 will be responsible for implementation. The City is currently in compliance. The City has applied for and received a grant to purchase a new PM-10 certified street sweeper in FY 2008. Until then, the City will use a contractor with a certified PM-10 street sweeper. The City has one full-time and one part-time employee designated for sweeping. Estimated personnel cost to the City is \$45,113.76. Funds from Capital Expenditure in the amount of \$24,495.31 are available for maintenance and supplies.
- 2007 ■ City of Mesa indicates that the City uses only PM-10 certified street sweepers to sweep streets. In FY 06/07 one new PM-10 certified street sweeper will be purchased and four existing street sweepers will be replaced. The Transportation Department also requires that all contracted street sweeping be conducted using PM-10 certified street sweepers. In 2006, the City of Mesa swept approximately 13,500 centerline miles of streets. The City of Mesa Transportation Department is responsible for sweeping streets and contract monitoring of the street sweeping contract. Arizona Revised Statute, Section 9-240: General Powers of Council. Mesa City Charter, Article I-Powers of the City. Ongoing implementation. Funding for the Transportation Department personnel and resources is allocated through the annual budget process. In January 2007, the City of Mesa began collecting an Environmental Compliance fee that will be used, in part, to pay for sweeping streets with PM-10 certified sweepers. The FY 06/07 budget included \$1.6 million for street sweeping activities. Arizona Revised Statute, Section 49-406, grants Maricopa County and the ADEQ the authority to enforce measures defined in the Nonattainment Area Plans. The City of Mesa will submit progress reports to State and/or County agencies upon request.
- 2007 ■ Town of Paradise Valley indicates that pursuant to Resolution Number 1084, adopted on September 23, 2004, the Town of Paradise Valley increased major and minor arterial street sweeping from once every 6 weeks to once every 2 weeks. The Town increased residential street sweeping from once every 12 weeks to once every 8 weeks. The Town conducts this program using 2 PM-10 certified street sweepers owned by the Town. The Town does not contract for

additional street sweeping services. The Town commits to drafting an administrative policy mandating the use of PM-10 certified street sweepers by all developers pursuant to a grading and drainage permit. This measure will be implemented by the Town of Paradise Valley Planning and Building Department. Legal authority for this action is provided under A.R.S. § 9-240. The draft schedule for completing this work is as follows:

- September 2007- draft policy written
- October 2007- draft policy shared with development community through "Builders Letter" and/or Development Community Meeting
- December 2007- Demolition/Grading/Building Permits revised to require PM-10 Sweepers

Preparation of the draft policy will be accomplished by current department personnel under the adopted budget for FY 2008. Administration and implementation of the measure will be conducted by current departmental personnel and included as part of the departmental personnel budget for future fiscal years. The enforcement function will be staffed and administered under the Planning & Building Department. The Town will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Peoria indicates that the City currently sweeps streets, using the following schedule:

- Designated arterials, residential and high volume collectors ("PM-10 route"): Once every ten calendar days
- Arterials: Once every three weeks
- Residential: Every five weeks
- The City only has PM-10 certified street sweepers in its inventory

The City of Peoria will research/initiate the requirement for its general contracting (internal maintenance), as well as all construction permits, to require the use of PM-10 certified street sweepers for cleanup of construction sites/tracking. The Public Works Department will be the responsible agency for street sweeping, using PM-10 certified street sweepers on public roads, and initiating the contract changes for City facilities. The Engineering Department will be responsible for initiating the Grading and Drainage permit requirements for contractors to use only PM-10 certified street sweepers. The City of Peoria will initiate its own maintenance contract changes of City-owned facilities by July 2007. The Engineering Department will hold public meetings with private

contractors (CIP and private development), to ensure that all construction activities affecting public roadways will use PM-10 certified street sweepers, by January 1, 2008. If this edict is not attainable for good reason, a revised schedule will be forthcoming.

The Public Works Department has five Sweeper Operators that maintain public right-of-way. For City property maintenance, the Department(s) maintaining the facility will enforce the use of PM-10 certified street sweepers through private contracts. For capital and private development projects, the City of Peoria project managers/inspectors will enforce the use of PM-10 certified street sweepers. For CIP and private projects, permits will not be issued, unless the contractor can confirm that PM-10 certified street sweepers will be used. For maintenance contacts of City-owned facilities, the contract will state that PM-10 certified street sweepers will be the only allowable equipment for parking lot sweeping.

On an annual basis, the Public Works Department will provide quantitative reporting of the street sweeping services provided by its PM-10 fleet. The City of Peoria currently has six PM-10 certified street sweepers, and will continue to replace street sweepers with PM-10 certified street sweepers. The Public Works Department will work with the Finance Department and the Materials Management Division to ensure that responsible City departments maintain parking lots and garages with PM-10 certified street sweepers. Upon completion of grading and drainage projects for private development, the Engineering Department will conduct a review to ensure that PM-10 certified street sweepers were used during those activities in compliance with the implementation plan described above. This will be researched to determine the availability of PM-10 sweepers in the private sector, so that we can determine when to initiate the changes to the City maintenance and City CIP/private development.

- 2007 ■ City of Phoenix indicates that the Street Transportation Department currently conducts all routine sweeping of City streets with PM-10 certified sweepers. The City does not use contract services for routine street sweeping. One street sweeper will be purchased in FY07/08 utilizing FY 2006 CMAQ funding with a local match. The Street Transportation Department does not anticipate replacing any sweepers in FY07/08. Information on future purchases is not currently available because sweeper replacement equipment is only projected one year in advance. Sweepers are replaced based on the recommendations of Public Works Department, Equipment Management Section.

Units: In 2005/06 the City swept approximately 191,058 lane miles of streets. That number is expected to increase as the City continues to grow. The City of Phoenix, Street Transportation Department is responsible for implementation.

Authority for Implementation:

A.R.S., Section 9-24: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights and Liabilities

One sweeper in FY07/08, total estimated cost for the new sweeper in FY07/08 is \$204,00. Total includes \$190,000 FY2006 CMAQ funding and local match of \$14,000. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Queen Creek indicates that the Town of Queen Creek Public Works Department will use only PM-10 certified street sweepers to clean roads. Contractors retained by the Town will also be required to use PM-10 certified street sweepers. The Town of Queen Creek Public Works Department, through the authority granted to them by A.R.S. § 9-240. The Town is currently in compliance. The Public Works Department has three PM-10 certified street sweepers in the fleet and operators on staff. The program is fully funded.

2007 ■ City of Scottsdale indicates that this measure would require all public paved roads in the PM-10 nonattainment area be swept with purchased or contracted PM-10 certified sweepers. The City of Scottsdale Street Operations Division currently conducts all routine sweeping of City streets with eight (8) PM-10 certified sweepers. The city does not currently use contract services for routine street sweeping. This measure will be implemented by the City of Scottsdale Street Operations Division. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council.

Ongoing implementation. The City currently sweeps major streets weekly, downtown streets three times per week and residential streets curbs every 5 to 6 weeks - all with PM-10 Certified Street Sweepers. The City currently employs 10 motor sweeper drivers who operate (8) PM-10 Certified Street Sweepers and two (2) smaller units that sweep paths, sidewalks and parking lots. The 2006/2007 Fiscal Year budget for paved street maintenance was \$1,056,912. The Municipal Services Department will oversee the implementation of this measure. Funding for replacement of equipment occurs in the fiscal year budget process. The City will submit progress to State and/or County agencies upon request. The City currently reports the PM-10 Certified Street Sweeping schedule on the city's web site, at www.ScottsdaleAZ.gov.

2007 ■ City of Surprise indicates that the Streets Division of the Public Works Department currently utilizes PM-10 certified sweepers for all routine sweeping performed throughout the city. The City does not use contract services for street sweeping. One street sweeper will be purchased in FY08 funded by a MAG

grant with local match. Below is a current replacement schedule for street sweepers as determined by the Fleet Division of the Public Works Department.

Asset #	Date Acquired	Replaced Yr	Division
2730	FY2002	FY2008	2002 Sterling/Schwa 7000
2644	FY2002	FY2012	2001 Sterling/Schwa 8000
3012	FY2005	FY2015	2004 Sterling/Schwa 7000
3013	FY2005	FY2015	2004 Sterling/Schwa 7000
3241	FY2006	FY2016	2005 Sterling/Schwa 7000
3242	FY2006	FY2016	2005 Sterling/Schwa 7000
3032	FY2006	FY2016	2006 Sterling/Schwa 7000

During FY07 the City swept approximately 12,904 lane miles of streets. This number is expected to increase as the City continues to grow. City of Surprise Public Works Department, Streets Division will be responsible for implementation. Two sweepers in FY08 (one grant funded, one replacement), one sweeper in FY12, two sweepers in FY15, three sweepers in FY16. Estimated costs of new sweepers in FY08 are as follows: Approximate Total Cost: \$420,000; MAG Sweeper Grant: \$185,000; Local Match: \$15,000; City of Surprise Capital Funding: \$210,000. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Tempe indicates that Tempe's entire fleet of street sweepers is PM-10 certified. Arterial streets are swept every 8-12 days; residential streets are swept monthly. In September 2004, the Tempe City Council adopted Resolution No. 2004.84 to implement measures to reduce re-entrained dust emissions from targeted paved roads in the revised PM-10 State Implementation Plan for the Salt River Area. One of the measures in the re-entrained dust emission control implementation plan included the following strategies:

- Response based street sweeping in heavy dust areas caused by construction work or other situations.
- Increased street sweeping frequencies on arterial or major collector streets when excessive dust situations have been identified.

- Increased street sweeping frequencies in areas when indicated as necessary by air quality monitoring data.

The City of Tempe is currently reviewing all development projects underway in the city limits, and will pursue a requirement that all contracted street sweeping on city streets be done with PM-10 certified sweepers.

The City of Tempe's Public Works Department (Field Operations Division) is responsible for implementing this measure. The work and strategies described above are underway and will continue. Staff will review all development projects underway, and will plan to have a PM-10 street sweeping requirement in place in all construction contracts by June, 2008. Adequate funding is provided in the City's 2006-07 and 2007-08 operating budgets to accomplish this measure. Any additional requirements or increased street sweeping frequencies would require additional funding, which would be considered in budget planning for 2008-09. The City's Water Utilities Department (Environmental Services Division) enforces excessive track out situations on private developments, and works closely with the Public Works Department on air quality requirements. Maricopa County and ADEQ also have enforcement authority over nonattainment area plans. The City of Tempe will monitor its street sweeping programs in relation to its air quality commitments. City of Tempe Resolution No. 2004.84 - To implement measures to reduce re-entrained dust emissions from targeted paved roads in the revised PM-10 State Implementation Plan for the Salt River Area.

- 2007 ■ City of Tolleson indicates that this measure would require all public paved roads in the PM-10 nonattainment area to be swept with purchased or contracted PM-10 certified street sweepers. The City of Tolleson Public Works Department, through the authority granted to them provided by A.R.S. § 9-240. The City is currently in compliance. The Public Works Department has two PM-10 certified sweepers in the fleet and operators on staff. The program is fully funded.
- 2007 ■ Town of Youngtown indicates that the Town sweeps streets monthly and has a PM-10 certified sweeper. Increased sweeping activity is the improvement sought and additional PW personnel are in the process of training to drive sweepers. The Public Works Department is responsible for implementation. This measure is implemented and ongoing. Personnel and funding allocated for implementation in the annual Public Works Department Budget. The monitoring program will include a review of the Public Works activity schedule.
- 2007 ■ Maricopa County indicates that this measure requires all new or renewed contracts for street sweeping on county roads must be conducted with street sweepers that meet the South Coast Air Quality Management District Rule 1186 Street Sweeper Certification Specifications for pick-up efficiency and PM₁₀ emissions.

Authority for Implementation:

Arizona Revised Statutes (A.R.S.) § 11-251 (General Powers of Board Supervisors)

A.R.S. § 28-6705 (Public road and street maintenance)

A.R.S. § 28-6708 (Jurisdiction of streets; unincorporated town)

A.R.S. § 49-474.01(A)(8)

Implementation Schedule:

July 2007 Existing contract meets requirements

Funding is allocated through the annual budget process. No change in existing funding is anticipated. CMAQ funding will be requested to purchase PM₁₀ certified sweepers in September 2007 for special purpose and exceptional event sweeping. MCDOT will oversee the implementation of this measure. MCDOT will submit annual progress reports to MCAQD as requested.

- 2007 ■ Arizona Department of Transportation indicates that this measure requires the use of PM-10 Certified Street Sweepers on State Highways that are located wholly or partially within the PM-10 nonattainment areas in order to reduce particulate emissions. Street Sweepers must meet the standards for PM-10 certification established by the California Air Resources Board (CARB) in response to CARB Rule 1186. The Arizona Department of Environmental Quality is empowered by A.R.S. § 49-104 to take necessary steps to protect the environment. Pursuant to A.R.S. 28-104, ADOT has the responsibility for maintenance of facilities on the State Highway System. The measure would be adopted as an internal ADOT policy by December 31, 2007, the implementation for contract sweeping will be contingent upon new contract renewal date (currently 1/19/08) a procurement process time required to award new contracts.

The Phoenix Maintenance District is responsible for maintaining and sweeping streets within the PM-10 Nonattainment Area. Routine sweeping is contracted to outside company and contract language will be modified requiring the use of PM-10 sweepers. Current ADOT contract sweeping has 80% PM-10 of sweepers that are PM-10 certified, when renewed in January 08; the contract will require the use of only PM-10 Street Sweepers. The current contract calls for the sweeping of 69,220 curb-lane miles annually. The current cost for contract sweeping is as follows.

- \$16.85 per curb mile for standard sweeping
- \$24.50 per curb mile for sweeping with the addition of a safety truck

Additional costs may be allowed under new contracts to accommodate the requirement of the use of PM-10 Efficient Sweepers. Supplemental and non-routine sweeping is conducted by the Phoenix Maintenance District, currently all maintenance orgs have access to 4 PM-10 efficient street sweepers. Starting January 1, 2008 only use of PM-10 efficient street sweepers will be used in the nonattainment area. Funding for FY08 to implement this control measure is estimated at \$300,000 to cover the cost of operating the PM-10 efficient street sweepers. A.R.S., Section 49-406, grants Maricopa County and ADEQ the authority to enforce measures defined in the Nonattainment Area Plans.

A reevaluation of the contract language requiring the use of PM-10 street sweepers will be conducted every time contract is renewed by ADOT. The location and sweeping frequency for a contract sweeping continues to be evaluated under existing control measure "97-DC-5 Frequent, Routine Sweeping or Cleaning of Paved Roads." The location and sweeping frequency of off-contract ADOT supplemental sweeping is evaluated under existing control measure "04-DC-1 Reducing Reentrained Dust Emissions from Targeted Paved Roads. " ADOT will submit progress reports or any additional records of implementation to MCAQD or ADEQ, upon request.

- 2006 ■ Maricopa Association of Governments Regional Council, on July 26, 2006, approved the FY 2007-2011 MAG Transportation Improvement Program including Congestion Mitigation and Air Quality Improvement Program funds for the purchase of PM-10 Certified Street Sweepers regionwide. In FY 2007, FY 2008, and FY 2009, the amount of federal funds available for the purchase of PM-10 Certified Street Sweepers is \$1,440,000, \$1,110,000, and \$1,210,000 respectively. On August 17, 2006, the U.S. Department of Transportation made a Finding of Conformity on the FY 2007-2011 MAG Transportation Improvement Program and Regional Transportation Plan 2006 Update.

For each fiscal year CMAQ funds are allocated for street sweepers, MAG will solicit requests for funding of PM-10 certified units from entities in the PM-10 nonattainment area. The funding requests will identify the number of centerline miles to be swept, expected frequency of sweeping, and average daily traffic, if available. This data will be collected by facility type (i.e. freeway, arterial/collector, local) for roads to be swept with the PM-10 certified units. MAG will estimate the emissions reduction for each sweeper requested and rank the requests in priority order of effectiveness for consideration in the allocation of CMAQ funds.

25. Pave or stabilize existing unpaved parking lots

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a city or town in Area A, no later than March 31, 2008, to adopt or amend codes or ordinances and, no later than October 1, 2008, commence enforcement of those codes or

ordinances as necessary to require that parking, maneuvering, ingress, and egress areas at developments other than residential buildings with four or fewer units are maintained with one or more of the following dustproof paving methods: (a) Asphaltic concrete. (b) Cement concrete. (c) Penetration treatment of bituminous material and seal coat of bituminous binder and a mineral aggregate. (d) A stabilization method approved by the city or town. (A.R.S. § 9-500.04 A. 6.).

S.B.1552 requires a city or town in Area A, no later than March 31, 2008, to adopt or amend codes or ordinances and, no later than October 1, 2009, commence enforcement of those codes or ordinances as necessary to require that parking, maneuvering, ingress, and egress areas that are three thousand square feet or more in size at residential buildings with four or fewer units are maintained with a paving or stabilization method authorized by the city or town by code, ordinance or permit (A.R.S. § 9-500.04 A.7.).

S.B. 1552 requires that a county with a population of two million or more persons or any portion of a county in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, no later than March 31, 2008, adopt or amend codes or ordinances and, no later than October 1, 2008, commence enforcement of those codes or ordinances as necessary to require that parking, maneuvering, ingress and egress areas at developments other than residential buildings with four or fewer units are maintained with one or more of the following dustproof paving methods: (a) Asphaltic concrete. (b) Cement concrete. (c) Penetration treatment of bituminous material and seal coat of bituminous binder and a mineral aggregate. (d) A stabilization method approved by the county. (A.R.S. § 49-474.01 A.5.).

The bill requires a county with a population of two million or more persons or any portion of a county in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, no later than March 31, 2008, adopt or amend codes or ordinances and, no later than October 1, 2009, commence enforcement of those codes or ordinances as necessary to require that parking, maneuvering, ingress, and egress areas that are three thousand square feet or more in size at residential buildings with four or fewer units are maintained with a paving or stabilization method authorized by the county by code, ordinance or permit (A.R.S. § 49-474.01 A. 6.).

S.B. 1552 exempts any site that has a permit issued by a control officer for the control of fugitive dust from dust generating operations (A.R.S. § 9-500.04 H. and § 49-474.01 H.).

2007 ■ City of Avondale indicates that this measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Avondale Charter. By March 31, 2008, the City will amend or adopt a city ordinance to require that parking, maneuvering, ingress, and egress areas for new and existing developments are maintained with paving or a stabilization method approved by the City. The City will allow a phase-in period prior to enforcing the new requirement. The phase in period will be used to educate and inform businesses and the public of the new requirement. Funding for the implementation of this measure is determined in the city's annual budgeting progress. The enforcement function will be staffed and administered under the Code Compliance Department. The Code Compliance Department will document process made in implementing this measure. The City will prepare and submit progress reports, when requested by outside agencies. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

2007 ■ Town of Buckeye indicates that this measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas. This measure will be implemented by the Town of Buckeye Community Development Department. The legal authority for this action is provided under Arizona Revised Statutes Section 9-240(B)(12) and 9-462.01. The implementation schedule is:

1. October 1, 2007- Coordination Meeting
2. December 7, 2007- Draft Ordinance Completed
3. January 8, 2008- Council Workshop
4. February 19, 2008- Public Hearing on Ordinance
5. April 1, 2008- Council Considers Ordinance for Adoption
6. July 1, 2008- Ordinance Implementation

An equivalent of one full-time employee will be required to work with the affected departments to draft the ordinance. The estimated cost to prepare the draft ordinance and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft ordinance and support leading to adoption will be performed by current department personnel consistent with the 2007/2008 fiscal year budget. This measure will be enforced by ordinance. The enforcement function

is anticipated to be staffed and administered by the Community Development Department. The Community Development Department will provide information documenting progress in implementing the measure as a part of the quarterly report to the Town Manager. On an annual basis, the Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree does not have any dirt parking lots. The Carefree Zoning Ordinance allows only paved or stabilized parking lots; therefore, no dirt parking lots will be constructed. The Town of Carefree is responsible for administering and enforcing the Zoning Ordinance. The ordinance has been adopted. The Town of Carefree budgets funds annually for the cost of administering and enforcing the Zoning Ordinance. The Town of Carefree enforces the Zoning Ordinance. The Town of Carefree monitors activities on private property to ensure compliance with the Zoning Ordinance. A copy of Section 7.06(3) of the Carefree Zoning Ordinance is attached to the resolution.
- 2007 ■ The Town of Cave Creek indicates that the Town of Cave Creek Zoning Ordinance requires commercial off-street parking spaces to be surfaced with concrete, asphalt or with a minimum of 3" of compacted decomposed granite or other dust controlling material approved by the Zoning Administrator. The Town of Cave Creek is responsible for administering and enforcing the Zoning Ordinance. The ordinance has been adopted. The Town of Cave Creek budgets funds annually for the cost of administering and enforcing the Zoning Ordinance. The Town of Cave Creek enforces the Zoning Ordinance. The Town of Cave Creek monitors compliance with the Zoning Ordinance. Ordinance O2006-02, Chapter 5, Page 19, Item 5- Surfacing, of the Town of Cave Creek Zoning Ordinance.
- 2007 ■ City of Chandler indicates that it is estimated that in Fiscal Year 2007-08 through 2009-2010 the City will pave or stabilize 100 acres of existing City parking lots or maneuvering areas. Legal authority for this action is provided under A.R.S. Section 9-240, General powers of common council, Section 1.03 Code of the City of Chandler. Since 1999 the City of Chandler has required all commercial development to pave all parking and maneuvering areas when they were constructed (Chandler City Code Section 35-1802 requires pavement). All residential development after 1982 was required to provide paved parking and maneuvering areas (Chandler City Code Section 35-1802 requires pavement). In 1982, when the City of Chandler enacted these provisions, the City had a population of approximately 43,000 people. The City's current population is 246,000 people. As such most of the residential and commercial/industrial

development, has been constructed since these provisions were put in place. The impact of having these requirements in place early is that most of the current parking maneuvering areas are paved.

The City of Chandler Public Works Department Director will oversee the paving/stabilization of these parking lots with support from the Downtown Redevelopment Division. The Public Works Director will appoint a Project Manager to track compliance and report such progress to the City Manager. These unpaved parking areas will be paved/stabilized in FY 2007-08. Stabilization or paving of the additional parking lots will require a commitment of \$600,000 for City owned parking lots. The program will be enforced by the Public Works Director. Progress of enforcement will be presented as the number of acres of existing City parking area stabilized or paved. The Public Works Project Manager will report to the City Manager the acres of parking lots paved or stabilized by the end of FY 2007-08. The City Manager's Office will forward this report to Maricopa County within 30 days of the end of the fiscal year. Maricopa County will report reasonable further progress to the U.S. Environmental Protection Agency. A copy of the applicable Code Sections is attached to the resolution. No Code changes are required to implement this measure.

- 2007 ■ City of El Mirage indicates that this measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas. The City of El Mirage will review city code 13-4-1 Excessive Dust to improve and strengthen its current code on paved lots within any portion of the City that is within a Nonattainment Area. City of El Mirage Community Development Department will develop an ordinance and the enforcement to be approved by Council to prevent excessive dust on unpaved parking lots in the nonattainment area. A.R.S., Section 9-240: General Power of Council. Development of an ordinance to be presented to Council by March 2008. Funding for enforcement is included in the annual operation budget for the departments listed above and is not listed as a separate budget allocation. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans.
- 2007 ■ Town of Fountain Hills indicates that the Town has one unpaved parking lot adjacent to the Town dog park. This parking lot will be paved during the spring of 2008. The measure will be implemented by the Town Parks and Recreation Department. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council. The Town has requested a grant to assist with the parking lot paving. This parking lot will be paved during the spring of 2008. The Town has budgeted approximately \$110,000 to pave the dog park parking lot. The enforcement function will be administered by the Public Works

Department. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Gilbert indicates that in 1998, the Town committed to establishing a code 1-30-10 that requires parking lots used in connection with industrial or commercial uses of property; and which contain at least five parking spaces or have a gross area greater than 2,000 square feet shall be paved or dust-proofed by the owner of such parking lot. Paving and dust proofing shall meet standards adopted by the Department of Public Works. Currently it is believed that all known permanent unpaved industrial or commercial parking lots are stabilized to approved Town standards. Temporary unpaved parking lots are identified as they arise and reported to Maricopa County Air Quality Department.

The Implementing Agency and Authority for Implementation are as follows:

Town of Gilbert, Code Compliance Department
A.R.S., Section 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers
Code of Gilbert Arizona, Section 30-10: Environment

Ongoing implementation. Funding for Code Compliance enforcement is included in the annual operating budget and is not listed as a separate allocation. Enforcement of Town code 30-10 occurs on both an observation and complaint basis. Code Compliance is located with the Development Services Department and is responsible for enforcing this code. Code Compliance Officers educate, warn of noncompliance, and issue notices of violation for repeat offenders. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Glendale indicates that this measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Glendale Charter. By March 31, 2008, the City will amend or adopt a city ordinance to require that parking, maneuvering, ingress, and egress areas for new and existing developments are maintained with paving or a stabilization method approved by the city. The City will allow a phase-in period prior to enforcing the new requirement. The phase-in period will be used to educate and inform businesses and the public of the new requirement. The Code Compliance Department is responsible for enforcing the City Code. Funding for the implementation of this measure is determined in the city's annual budgeting process. The measure is expected to be enforced. The Code Compliance Department will document progress made in implementing

this measure. The City will prepare and submit progress reports, when requested by outside agencies. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ City of Goodyear indicates that the City will inventory all unpaved vacant lots within the City's boundaries. Based on the inventory the City will review their existing ordinances to include requirements of stabilizing any unpaved parking lots. This measure will be implemented by the City of Goodyear Community Initiatives Department, (Code Compliance Division), along with the Public Works Department and Engineering and Planning and Zoning Departments. The City of Goodyear currently has an ordinance in place that prohibits the operation of motorized vehicles on private land without the written permission of the owner. Ordinance 200-981. The City of Goodyear Zoning Ordinances, section 3-2-6 and 3-2-12 requires dust control of all unpaved parking and maneuvering areas. Chapter 6 of the Engineering Design Standards and Policies Manual outlines dust control measures during construction activities. In FY 07-08 the City will review codes, ordinances and policies to identify options for enhanced dust control measures for unpaved parking lots. FY 07-08 the City will contact private property owners about PM-10 measures for unpaved parking lots. FY-08-09 the City will implement an Educational and Outreach Program for business owners and developers on enforcement of PM-10 measures.

The increased enforcement measures will require additional staff members to be acquired in FY 08-09 to include one additional Code Compliance Officer and one Environmental Compliance Officer. Additional staffing is estimated to cost the City \$175,000. The Community Initiatives Department will enforce the existing ordinance, (2006-981) with current staffing. The Public Works Department along with the Engineering and Planning and Zoning Departments will track and maintain a list of all unpaved parking lots by property owner.

- 2007 ■ Town Guadalupe indicates that the Town will conduct an inventory to determine dirt parking lots and drive approaches. The building inspector will help to identify the unpaved parking lots and drive approaches and to determine the course of action needed to correct the deficiency. The Town of Guadalupe Public Works Department through the authority granted to them by A.R.S. Section 9-240. The study to identify dirt parking lots and drive approaches will be completed by October 1, 2007. The Town will begin working with property owners to stabilize these areas by January 1, 2008. The Public Works Director (building inspector) will be responsible to complete the study to identify the unpaved areas and work with the owners to effect stabilization. Town owned vacant lots and dirt approaches to buildings will be stabilized by using millings from street overlays scheduled during the 2008 fiscal year. Review and adoption of a town ordinance to require all parking and vehicular traffic surfaces to be stabilized to reduce dust. The building inspector will be responsible for monitoring.

- 2007 ■ City of Litchfield Park indicates that the City currently does not have any unpaved parking lots. The Code Enforcement Officer will help identify the privately-owned unpaved parking lots and determine the course of action needed to correct the deficiency. The City of Litchfield Public Works Department through the authority granted to them by A.R.S. § 9-240. The Code Enforcement Officer will begin immediately identifying unpaved privately-owned parking lots. The Code Enforcement Officer will address any noncompliance through their normal procedures. Maricopa Association of Governments (MAG) Management Committee approved Litchfield Park's application for FY 2008 CMAQ (Congestion Mitigation Air Quality) funding to pave the unpaved alleys in the City. The total estimated project cost is \$758,541; with CMAQ funding of \$530,979, which covers 70% of the estimated project cost. The City has budgeted funds in the Capital Improvement Project for this project. The City Code Chapter Nine section 9-5-4 states "The creation of dust is in violation of requirements and standards of Maricopa County". Code Enforcement will address any noncompliance through their normal procedures. Code Enforcement shall be responsible for monitoring privately-owned parking lots.
- 2007 ■ City of Mesa indicates that the City's regulation of unpaved parking lots is based upon the City Codes and Policies discussed below.
- Particulate Pollution Ordinance: City of Mesa Code 8-2-4 (E) requires that no person shall operate, maintain, use or allow the use of any unpaved area larger than five thousand (5,000) square feet for the parking, storage, servicing, or dispatching of motor vehicles without first implementing control measures to effectively prevent or minimize fugitive dust. To enhance the effectiveness of the particulate pollution ordinance, the Environmental Programs Division will evaluate the possibility of removing the square footage requirement (>5000 square feet) for unpaved parking lots.
 - Public Nuisances, Property Maintenance and Neighborhood Preservation: City of Mesa Code 8-6-3 (T) requires that it shall be unlawful to park any motor vehicle within the front or side yard of a single-residence use unless such parking is on an improved, dustproof parking surface.
 - Public Nuisances, Property Maintenance and Neighborhood Preservation: City of Mesa Code 8-6-3 (J) requires that it shall be unlawful for any person to display any vehicle or boat for sale, rent, or lease on vacant or undeveloped or unsurfaced property, and no owner or occupant of vacant, undeveloped, or unsurfaced property shall allow or permit such displays.

- Zoning Code-Parking Regulations: City of Mesa Code 11-16-2 (E) requires that parking and loading spaces, maneuvering areas, and driveways shall be paved with asphalt, concrete, paving stone, or masonry to a sufficient thickness to withstand vehicular traffic.

Environmental Programs has one full time staff person who will focus inspection efforts on dust generating activities (unpaved parking lots, construction and vacant parcels). Additionally, there are two full time Environmental Specialist and a Division Administrator who are authorized to support the particulate pollution program including conducting inspections and initiating enforcement actions, [8-2-4(E)]. Code Compliance staff enforces the parking ordinances [8-6-3 (T) and 8-6-3 (J)]. The Planning and Building Safety Divisions enforces the zoning code [11-16-2 (E)]. Arizona Revised Statute, Section 9-240, General Powers of Common Councils. Mesa City Charter, Article I: Powers of the City. Mesa City Code, Section 8-2-4 (E), 8-6-3 (T), 8-6-3 (J) and Section 11-16-2 (E).

Implementation of current codes will be ongoing. Environmental Programs will complete the review of the current particulate pollution ordinance and any edits by January 1, 2008. Funding is allocated through the annual budget process to fund staff positions in Environmental Programs, Code Compliance, Planning and Building Safety. The Environmental Programs Division conducts proactive inspections of construction sites and inspects City owned vacant lots monthly. Over the past several years, the Environmental Programs Division has conducted on average more than 160 dust inspections annually. The Code Compliance Division generally enforces ordinances on a complaint basis. Over the last several years, Code Compliance issued an average of 1989 notices for parking violations on unimproved surfaces. Arizona Revised Statute, Section 49-406, grants Maricopa County and the ADEQ the authority to enforce measures defined in the Nonattainment Area Plans. The City of Mesa will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Paradise Valley indicates that there are approximately five unpaved commercial parking lots in Paradise Valley. An ordinance will be drafted and considered to require application of dustproofing to existing unpaved commercial parking lots within two years. Dustproofing options may include paving, gravel, or application of dust palliatives. This measure will be implemented by the Town of Paradise Valley Planning and Building Department. Legal authority for this action is provided under A.R.S. § 9-240. The schedule for completing this work is as follows:

1. September 28, 2007- Draft ordinance completed
2. October 25, 2007- Town Council work session to receive briefing from staff, discuss, and provide feedback

3. November 15, 2007- Town Council considers ordinance for adoption
4. January 1, 2008- Ordinance implementation and enforcement

Preparation of the draft ordinance and staff support leading to adoption will be accomplished by current department personnel under the adopted budgets for FY 2008. Administration and implementation of the measure will be conducted by current departmental personnel and included as part of the departmental personnel budget for future fiscal years. The enforcement function will be staffed and administered under the Planning & Building Department. The Town will submit progress reports to State and/or County agencies upon request. A copy of the ordinance, if adopted, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ City of Peoria indicates that the City will inventory all unpaved parking lots within its jurisdiction. Based on the analysis of the inventory, the City of Peoria will require each property owner to pave or stabilize any unpaved parking lots. The City of Peoria, Engineering Department, along with the Community Development Department (Code Enforcement Division) will be the responsible agencies. Authority for implementation of the measure is City of Peoria Municipal Code 23-76. The City of Peoria currently has an Ordinance requiring all unpaved parking lots to be paved or stabilized. The City of Peoria will inventory all unpaved parking lots by January 2008. Notification of all property owners of the requirement to pave and/or stabilize the parking lots shall be made by March 2008. The Community Development Department (Code Enforcement Division) will designate five staff members to inventory, and provide a list of unpaved parking lots within the City of Peoria. The Engineering Department will designate two staff members to write and track notification letters sent to affected property owners. Funding could be required for ongoing monitoring and over time. The monitoring process could require a full time position in both the Engineering Department and the Community Development Department (Code Enforcement Division).

The City of Peoria Ordinance 23-77. Violation of 23-76 is a Civil Sanction. Our policy will be that upon notification, the property owner has 60-days to submit an abatement plan to the City Engineer for approval. Upon approval, the property owner will have an additional 60-days to implement the abatement plan. If the property owner does not implement within the allowed time, the City of Peoria has the authority to begin legal procedures to resolve the violations. The Engineering Department will track and maintain a list of all unpaved parking lots by property identification number, owner of record, notification date, approval date and/or code issuance date(s).

2007 ■ City of Phoenix indicates that parking standards are addressed through the Zoning Code, the Neighborhood Preservation Ordinance (Phoenix City Code, Chapter 39), and the Traffic Codes.

- Review of Codes and Policies: To enhance compliance with the Zoning Codes for designated parking areas, the Planning Department will review their letters of approval for alternative parking lot treatment to clarify that the property must be “maintained” in compliance with the Code and other edits to enhance compliance.
- Zoning Code- Parking Standards: Zoning Code Section 702 requires that all parking, maneuvering areas, and storage areas shall have dustproof paving which includes asphalt, concrete, or equivalent treatment as approved by the Zoning Administrator.
- Property Maintenance-Neighborhood Preservation Ordinance: City Code Section 39-7(G) requires that motor vehicles or trailers shall not be parked, maneuvered, or stored upon a lot or area within the City which is not dustproof. Dustproof parking includes asphalt, concrete, or equivalent treatment as approved by the Zoning Administrator. Dustproof parking for a single family or duplex lot may include asphalt; concrete; a smooth layer of crushed rock or gravel 1/4 to 3/4 inch size that is maintained to a depth of two inches with a parameter boarder; or alternative as approved by the Zoning Administrator.
- Vehicles on Vacant Lots-Traffic Code: Phoenix City Code, Section 36-62 requires that no person shall operate a vehicle on or across any portion of a vacant lot other than on an established dustproof driveway.

Implementing Agency or City Department:

City of Phoenix, Neighborhood Services Department
City of Phoenix, Planning Department
City of Phoenix, Development Services Department
City of Phoenix, Police Department

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights, and Liabilities

References to Codes & Ordinances:

City of Phoenix Zoning Code, Section 202: Definitions

City of Phoenix Zoning Code, Section 702 (A)(2)(d): Dustproofing and Paving

Phoenix City Code, Section 36-62: Operation of Vehicles on Vacant Lots

Phoenix City Code: (Neighborhood Preservation Ordinance)
Section 39-7 (G): Property Maintenance-Parking, Maneuvering, and Storage

Ongoing implementation. Planning will complete the review of the approval letter for alternative pavement, codes and policies and complete any edits by January 1, 2008. Funding for the planning, Neighborhood Services Department, Development Services Department and Police Department's tasks is included in the annual operating budget and is not listed as a separate allocation. The Planning Department Administers the Zoning Code. The Neighborhood Services Department and the Development Services Departments enforce the Zoning (site plan/parking plan) standards. The Neighborhood Services Department also enforces the Neighborhood Preservation Ordinance on all properties on complaint basis. Over the past few years NSD issued an average of more than 7,500 Notices of Violation each year for dust-proofing requirements. In addition to responding to complaints, the City Council-approved NSD Code Enforcement Policy allows that when an initial inspection is conducted based upon a complaint for another violation, the inspector may expand upon the initial complaint on the same property to determine whether any of eight common blight violations exist, including nondustproof parking. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Queen Creek indicates that the Town will stabilize five existing Town-owned parking lots and the drive approach to the temporary municipal corporation yard. Code Enforcement personnel will help to identify the privately-owned unpaved parking lots and determine the course of action needed to correct the deficiency. The Town of Queen Creek Public Works Department and Community Development, through the authority granted to them by A.R.S. § 9-240. The identified five parking lots and drive approaches owned by the Town will be stabilized by September 2007. Code Enforcement personnel will begin immediately identifying unpaved privately-owned parking lots. A one-time "contractual" cost of \$50,000 to stabilize Town-owned properties is included in the proposed budget for FY07/08. Code Enforcement personnel will monitor privately-owned parking lots during the course of their normal daily work activities. Town Zoning Ordinance, Article 5.6 (A) 8. (C.) requires all parking and

vehicular traffic surfaces to be surfaced with concrete or bituminous pavement. Exceptions are only allowed if proposed surface generates the same (or less) dust than a paved surface. Code Enforcement will address any noncompliance through their normal procedures. Code enforcement shall be responsible for monitoring privately-owned parking lots.

- 2007 ■ City of Scottsdale indicates that this measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved parking and vehicle maneuvering areas. The City of Scottsdale Parking Lot Ordinance (S.R.C. Chapter 46, Article II, Sec. 46-16 and 46-17) requires paved parking for all lots of six (6) or more spaces. Section 46-18 Dust Control, specifies that for exceptions to the paving requirement, parking lot owners must use, control or maintain parking lots to ensure adequate dust control. Parking lot owners can be issued thirty (30) day written notices by the city manager for noncompliance with dust control. The City of Scottsdale Basic Zoning Ordinance, Appendix B, Article IX, Sec. 9-103 requires unpaved parking lots to be upgraded to the paved parking lot standards as a condition for a building permit for expansion.

Responsible Agency and Authority for Implementation:

City of Scottsdale Planning and Development Department
City of Scottsdale Code Enforcement Division

Authority for Implementation:

A.R.S. Section 9-240, General Powers of Common Council.
Scottsdale City Charter, Article I, Sec. 3: Powers of City
Scottsdale Revised Code Chapter 46
Scottsdale Basic Zoning Ordinance, Appendix B, Article IX, Section 9-103

Ongoing Implementation. The City of Scottsdale is adequately staffed and funded to implement the existing parking lot paving standard. The City of Scottsdale enforces parking lot paving standards and responds to nuisance complaints, including dust complaints, under existing ordinance authority. Currently, the city has approximately fifty (50) Code Enforcement, Planning, Public Works and Building Inspectors. When appropriate, referrals are made to the Maricopa County Air Quality Department. A.R.S. Section 49-406, grants Maricopa County Air Quality Department and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit reports to the state and/or county agencies upon request.

- 2007 ■ City of Surprise indicates that parking standards are addressed through Zoning Ordinances (Chapter 17) of the City of Surprise Municipal Code Book. Zoning Code-Off-Street Parking Requirements-City Code Section 17.32.080 B (12) requires all areas intended to be utilized for parking space and driveways shall be paved with materials suitable to control dust and drainage. Schedule for adopting more stringent parking codes/annual resources budgeted to enforce the more stringent parking code.

City Community Development Department, Code Enforcement and Planning Divisions are responsible for implementation. Ongoing implementation. Funding for the Community Development Department, Code Enforcement Division tasks are included in the annual operating budget and is not listed as a separate allocation. The Community Development, Planning Division Administers the Zoning Code. A.R.S. Section 49-406, grants Maricopa County Air Quality Department and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit reports to the state and/or county agencies upon request.

- 2007 ■ City of Tempe indicates that implementing this measure will involve strengthening dust control activities and enforcement of existing dust control laws and rules on publicly and privately owned parking lots and vehicle maneuvering areas. The City of Tempe will commit to the following:

- Prepare an inventory of all unpaved city owned parking lots and vehicle maneuvering areas.
- Develop a plan to pave, stabilize, and/or restrict vehicular access to these areas, in compliance with applicable federal, state, county and local dust control rules and regulations.
- Review current parking ordinances; amend existing ordinances or create a new ordinance as necessary to prohibit vehicle parking or vehicle use on unstabilized parking lots.

City of Tempe Development Services and Public Works departments are responsible for implementation. The inventory of unpaved parking lots as described above will be completed within six months of City Council approval of these measures. The ordinance and city code review will be completed in twelve months of City Council approval of these measures. The staffing level for implementing the measure as described above is adequate. For the City's commitment to paving, stabilizing, and/or restricting vehicular access to its unpaved parking lots/vehicular maneuvering areas, the Public Works Department will do the following:

- Examine existing operating and capital funds to determine what work can be done with existing funding.
- Prepare budget requests as necessary for consideration during the budget processes for fiscal years 2008-09 and 2009-10.

Enforcement of vehicle parking codes is the responsibility of the City's Development Services Department. Code violations and compliance information are tracked by the Development Services Department. Information and data will be provided to the state and county upon request.

Parking on vacant lots is addressed in the Zoning and Development Code as follows:

Chapter 6, Section 4-602, B. Parking Standards Applicable in All Zoning Districts

2. *Parking* is allowed only on paved *parking* surfaces. Pavement may be concrete, asphalt, or a porous material approved by the Development Services Manager, or designee. Where decomposed granite or similar porous pavement is used, it shall conform to ADA guidelines and the *parking* lot entrance(s) and exits(s) shall have tire cleaning strips to remove loose particles from the tires of vehicles.

2007 ■ City of Tolleson indicates that this measure would involve strengthening and proactively enforcing dust control rules or ordinances that reduce fugitive dust and PM-10 emissions from existing unpaved and vehicle maneuvering areas. The City of Tolleson Public Works and Code Enforcement, through the authority granted the them by A.R.S. § 9-240. By May 31, 2008, the City will amend or adopt a city ordinance to require that parking, maneuvering, ingress and egress areas for new and existing development are maintained with paving or stabilization method approved by the city. The City will allow a phase-in period prior to enforcing the new requirement. The phase in period will be used to educate and inform businesses and the public of the new requirement. Funding for the implementation of this measure is determined in the city's annual budgeting process. The enforcement function will be staffed and administered under the Code Enforcement Division. The Public Works Department and Code Enforcement will be responsible for monitoring privately-owned parking lots. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

2007 ■ Town of Youngtown indicates that Youngtown aggressively enforces this issue and does not have any unpaved parking lots. Commercial property owners are informed to repair and maintain parking areas. The Code Compliance Officer is responsible for implementation. Youngtown Code-Chapter 8.20.010 to .050; 8.24.020; 8.28.010 to .030. Youngtown General Plan Chapter 7 Environmental

Element. This measure is implemented and ongoing. Personnel and funding allocated for implementation is in the Code Compliance Budget. The Code Compliance Officer has the primary responsibility to enforce this section of the Code. The Town will periodically monitor the appearance of the Town for parking violations and review, the Code Compliance Officer's activity report.

2007 ■ Maricopa County indicates that the Maricopa County Planning & Development Department requires the following dustproof paving for parking areas in unincorporated areas of Maricopa County under existing zoning ordinances:

- Paved parking for new multi-family, commercial, industrial, and other kinds of nonsingle family residential uses and paving or surfacing with ABC material for new single family residential uses [Maricopa County Zoning Ordinance Chapter 11, Section 1102].
- Paving or surfacing with ABC for any existing use which requests permits for expansion [Maricopa County Zoning Ordinance Chapter 11, Section 1102.7].
- Paved parking for special uses [Maricopa County Zoning Ordinance Chapter 13, Section 1301.5.3].

The Maricopa County Air Quality Department will conduct proactive and complaint-based inspections of existing parking lots located within unincorporated areas of Maricopa County and commence enforcement as necessary to require dustproof paving methods.

The Maricopa County Planning and Development Department derives its authority to adopt and enforce zoning ordinance provisions from A.R.S. §11-808(A) and A.R.S. §11-821(B). Maricopa County Zoning Ordinance Chapter 11, Section 1102 establishes parking regulations for unincorporated areas of Maricopa County. Maricopa County Zoning Ordinance Chapter 13, Section 1301 establishes parking requirements for special uses.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

A.R.S. § 49-474.01(A)(5) and (6) require adoption or amendment of codes or ordinances by March 31, 2008, and commence enforcement as necessary by October 1, 2008, to require dustproof paving methods for the following: 1) Parking, maneuvering, ingress, and egress areas at developments other than residential buildings with four or fewer units; 2) Parking, maneuvering, ingress, and egress areas that are 3,000 square feet or more in size at residential buildings with four or fewer units.

Implementation Schedule:

- | | |
|-----------------|--|
| Ongoing | In unincorporated areas of Maricopa County, Maricopa County Zoning Ordinance Chapter 11, Section 1102.7.1 and 1102.7.2 require paved parking for new multi-family, commercial, industrial, and other kinds of nonsingle family residential uses. Paving or surfacing with ABC material is required for new single family residential use. Paving or surfacing with ABC is also required for any existing use which requests permits for expansion. The Maricopa County Planning and Development Department enforces these requirements through its authority to issue zoning and building permits. |
| Ongoing | Continue complaint inspections of existing unpaved parking areas and commence enforcement as necessary to require dust proof paving methods. |
| June 2008 | Hire 4 dust control vacant lot compliance inspectors to conduct proactive and complaint inspections of unpaved parking lots. |
| October 1, 2008 | Begin proactive inspections of existing high volume use unpaved parking areas located within unincorporated areas of Maricopa County and commence enforcement as necessary to require dustproof paving methods. |

The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots and Unpaved Roadways) and the majority of Rule 316 (Nonmetallic Mineral Mining) sources. Currently, the Dust Compliance Division has a division manager and the following level of personnel for the dust control vacant lot (Rule 310.01) program:

Position	Dust Control Vacant Lot (Rule 310.01) Personnel
AQ Inspector Supervisor	-
AQ Inspector	10
Administrative Support	-
Total	10

The Maricopa County Air Quality Department will seek approval to hire 4 dust control vacant lot compliance inspectors to conduct proactive inspections of unpaved parking lots. Assuming that the vast majority of these parcels are already at grade, the Maricopa County Planning and Development Department estimates that annually 1,360 commercial parcels will require drainage review and would require an increase in 4 to 5 drainage plan reviewers. This estimate does not take into account any residential parcel load.

The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs associated with 4 additional dust control vacant lot inspectors to conduct proactive inspections of unpaved parking lots are estimated to be \$255,000. Annual costs associated with 4 to 5 additional drainage plan reviewers are estimated at an annual cost of \$423,135.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department will track the number of unpaved parking lot inspections, notices of violation issued, enforcement actions taken, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard.

26. Pave or stabilize existing public dirt roads and alleys

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a city or town in Area A, beginning on January 1, 2008 to develop and implement plans to stabilize targeted unpaved roads, alleys and unpaved shoulders on targeted arterials. The plans shall address the performance goals, the criteria for targeting the roads, alleys and shoulders, a schedule for implementation, funding options and reporting requirements. Priority shall be given to the following: (a) Unpaved roads with more than one hundred average daily trips. (b) Unpaved shoulders on arterial roads and other road segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume (A.R.S. § 9-500.04 A.3.).

S.B. 1552 requires a county which contains any portion of Area A, beginning on January 1, 2008 to develop and implement plans to stabilize targeted unpaved roads, alleys and unpaved shoulders on targeted arterials. The plans shall address the performance goals, the criteria for targeting the roads, alleys and shoulders, a schedule for implementation, funding options, and reporting requirements. Priority shall be given to the following: (a) Unpaved roads with more than one hundred average daily trips. (b) Unpaved shoulders on arterial roads and other road segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume (A.R.S. § 49-474.01 A.4.).

S.B. 1552 allows counties to use petroleum based or nonpetroleum based products in the maintenance and repair of unpaved roads, alleys, and shoulders identified pursuant to A.R.S. § 9-500.04 and § 49.474.01 or unpaved roads, alleys, and shoulders in any county where the control officer certifies to the Board of Supervisors that emissions from such roads, alleys or shoulders endanger compliance with the national ambient air quality standard (A.R.S. § 28-6705 C.).

2007 ■ City of Apache Junction currently maintains approximately 18 miles of dedicated dirt roads. In 2004 the City set the goal of paving 4 miles of dirt roads a year. Starting in fiscal year 07-08, the City will increase this minimum to 6 miles of dirt roads to be paved within that FY. An additional commitment will be to complete the paving of all dedicated dirt roads in 2009. The City will also inventory its alleys and commit to dust proofing a minimum of 2 lane miles of the City's highest traversed alleys with recycled asphalt millings. This measure will be implemented by the City of Apache Junction Public Works Department. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation schedule is:

1. December 29, 2007- Complete the inventory and assessment of city maintained alleys.
2. February 29, 2008- Dustproof a minimum of two lane miles of alleys.
3. June 30, 2008- Complete the paving of six miles of dedicated dirt roads.
4. August 31, 2009- Finish the paving of remaining dedicated dirt roads within Apache Junction (estimated eight miles).

The estimated cost for the inventory and dust proofing of existing two lane miles of alleys for the fulfillment of this measure will require an additional cost of \$15,000. This will be accomplished by current department personnel and materials under the adopted city budget for FY 07-08. The cost of paving an additional two miles of dedicated dirt roads in FY 07-08 would be \$75,000 and

completing the remaining dedicated dirt roads by 2009 is estimated at \$175,000. The resources needed to complete the paving by 2009 will be accomplished by current resources under the adopted city budget for FY 07-08 and future Public Works Department budgets. This measure will be staffed and administered under the Public Works Department. Progress in implementing the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. Progress reports and plans will be forwarded to Maricopa County and/or MAG per any progress request.

- 2007 ■ Town of Buckeye indicates that this measure would require the paving or stabilizing of public dirt roads that carry less than 150 vehicles per day but more than 50 vehicles per average weekday. This measure will be implemented by the Town of Buckeye Public Works Department. Legal authority for this action is provided under Arizona Revised Statutes Sections 9-240(A) and (B)(3). The development of a life cycle program will be initiated during the 2007/2008 fiscal year. Implementation of the life cycle program is planned to begin July 1, 2008. Road projects will be dependant on criteria identified in the life cycle program and on available funding for Capital Improvement Projects.

The Town will employ an equivalent of one consulting firm to work with the affected departments to draft the life cycle program. The estimated cost to prepare the draft plan and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft plan will be performed by current department resources allocated with the 2007/2008 fiscal year budget. This measure will be incorporated into a road life cycle program. The enforcement function will be staffed and administered under the Public Works Department. The Public Works Department will provide a report of the progress in implementing this measure with its budget requests for the subsequent fiscal year. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the Capital Improvement Plan, if approved by Council, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree does not have any public dirt roads, alleys, or shoulders. The Town of Carefree allows only paved or stabilized roads, alleys or shoulders. All public roads and alleys are to be constructed to the Uniform Standard for Public Works Construction distributed by the Maricopa Association of Governments (MAG). The Town of Carefree is responsible for constructing and maintaining its roads, alleys, and shoulders. The Town of Carefree is currently maintaining it roads, alleys, and shoulders. The Town of Carefree budgets funds annually for the cost of constructing and maintaining its roads, alleys, and shoulders. The Town of Carefree administers its road, alley, and shoulder construction and

maintenance programs. The Town of Carefree monitors its road, alley, and shoulder construction and maintenance programs. A copy of Section 11-1-5 of the Carefree Code of Ordinances is attached to the resolution.

- 2007 ■ Town of Cave Creek schedules dust control spraying of dirt roads and unpaved streets in the Town of Cave Creek Rights-of Way; approximately 25 miles of sprayed roads with an ADT of 50-150. The Town of Cave Creek is responsible for scheduling dust control for its dirt roads and unpaved streets. The Town of Cave Creek currently schedules dust control on a regular schedule as well as when additional needs arise. The Town of Cave Creek budgets funds annually for the costs of dust control for dirt roads and unpaved streets on a regular schedule. The Town of Cave Creek will administer the dust control program. The Town of Cave Creek will monitor the dust control program.

The Town of Cave Creek schedules an annual chip sealing project for paving approximately 5-miles of unpaved roads in the Town of Cave Creek Rights-of Way. The goal is to pave the majority of the remaining dirt roads within five (5) years; approximately 25 miles with an ADT of 50-150. The Town of Cave Creek is responsible for paving unpaved roads in the Town of Cave Creek Rights-of-Way per the annual project schedule and funds available. The Town of Cave Creek currently schedules annually to pave approximately 5-miles of unpaved roads through its chip seal project. The Town of Cave Creek budgets funds annually for the costs of paving unpaved roads through its chip and seal project. The Town of Cave Creek will administer the annual chip seal project. The Town of Cave Creek will monitor the annual chip seal project.

- 2007 ■ City of Chandler indicates that this measure would require paving or stabilizing of City owned public dirt roads and alleys that carry more than 50 vehicles per day. The City of Chandler has 129 miles of alleyways and over 1875 lane miles of City streets. There are currently 30 miles of unstabilized alleys and .095 miles of City owned unpaved roads. This means that 77% of the City alleys are already paved or stabilized, and over 99.95% of the City streets are paved. During fiscal year 2007-2008, 10 miles of alley will be stabilized, 0.7 miles of public roadway will be paved, and 0.25 miles of roadway will be stabilized. During the next two fiscal years the remaining 20 miles of alley will be stabilized and the 0.25 miles of roadway that was stabilized the year before will be paved. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council and Section 1.03 Code of the City of Chandler. The City of Chandler through the Public Works Department will pave or stabilize existing City owned dirt roads and alleys. The Public Works Department will pave or stabilize existing City owned dirt roads and alleys. The Public Works Director will identify a Project Manager who will oversee this work and report progress to the City Manager. Paving of the 0.95 miles of unpaved streets will cost \$1,069,000. Stabilization of the 30 miles of alleys will cost \$2,817,000. These projects will be spread over three years for completion.

The program will be implemented by the Public Works Department. The schedule for implementing this measure is as follows.

1. FY 2007-08-10 miles of alley stabilized, 0.7 miles of road paved, and 0.25 miles of road stabilized.
2. FY 2008-09-10 miles of alley stabilized and 0.25 miles of road paved.
3. FY 2009-10-10 miles of alley stabilized.

Progress of enforcement will be presented in metrics as the amount of roadway and alley stabilized and paved. The Public Works Project Manager will report to the City Manager annually as to the work completed. The City Manager's Office will submit the annual report to Maricopa County within 30 days of the end of the fiscal year. Maricopa County will be responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of applicable Code Sections is attached to the resolutions. No Code changes are required to implement this measure.

2007 ■ City of El Mirage indicates that this measure would revise Rule 310.01 to require paving or stabilizing of public dirt roads that carry less than 150 vehicles per day. The Public Works Department Street Division is currently stabilizing all unpaved dirt roads with millings of asphalt/gravel, repairing pot holes on a needed basis and smoothing the asphalt/gravel on the streets. The water truck is used temporally for dust control on dirt roads and alleys. City of El Mirage Public Works Department Street Division is responsible for implementation. A.R.S., Section 9-240: General Power of Council. To be completed in the fall of 2007. This will occur annually or on an as needed basis to reapply or repair a target area. The funding for the Street Division tasks are included in the annual operating budget and are not listed as a separate allocation. Funding for stabilization of unpaved roads and alleys will be in the annual operating budget of FY 2007/08. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Fountain Hills indicates that the Town does not have any dirt roads. The Town has five unpaved alleys in design to pave in future phases over the next five years. The Town Public Works Department and Town Parks and Recreation Departments are responsible for implementation. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council. The Town Parks and Recreation Department plans to pave the alley between Desert Vista and Tower Drive by the spring of 2008. The balances of the alleys are in process of design to hard surface the alleys or abandon the alleys to the adjacent property owners. Alleys will be paved as funds are

available in the Town budget process. The Town is in process of funding the improvements. The Town portion of paving the dirt alley adjacent to the dog park is approximately \$150,000. The estimated construction cost of the other dirt alleys is \$1,400,000. The enforcement function will be staffed and administered by the Public Works Department and the Parks and Recreation Department. The Town will submit progress reports to the State and/or County agencies upon request.

- 2007 ■ Town of Gilbert indicates that the town has developed and implemented plans to pave or stabilize unpaved public dirt roads and alleys. In 2005, the Town developed a protocol to reduce reentrained dust emissions from paved roads that typically experience a high level of soil deposition. This protocol continues to be implemented. The Town maintains a list of existing public dirt roads and alleys. There are approximately 2.25 miles of alleys stabilized with millings or other such stabilization methods maintained by the Town of Gilbert. Prior to recent annexations, there were no unpaved public dirt roads in the Town of Gilbert. The newly annexed areas are being evaluated to determine public and private roadways. Upon determination of any newly annexed unpaved public dirt roads, the protocol will be applied, and at a minimum, the roads will be stabilized and maintained with priority being given to roads with more than 50 trips per day. Town land development code requires that residential, industrial, and commercial developments design and construct right-of-way improvements to meet Town standards including, but not limited to, paving, curb, gutter, and sidewalk.

The Implementing Agency and Authority for Implementation are as follows:

Town of Gilbert, Public Works Department
Town of Gilbert, Development Services Department
A.R.S., Section 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers

The alleys are inspected, regraded and watered approximately monthly. Newly annexed public roads will be stabilized within 90 days of determination of public road status. Roads and alleys are maintained by the Public Works Department and funding is allocated through the annual operating budget for the department. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Glendale indicates that the measure would revise Rule 310.01 to require paving or stabilizing of public dirt roads that carry less than 150 vehicles per day (e.g., 50 vehicles per day). Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council and the Glendale

Charter. Currently, all public roads in the city's system are paved and all alleys owned by city are paved. The City will develop a plan and budget to pave and/or stabilize city-owned roads and alleys in the event the City incorporates lands that contain unpaved roads and alleys. The Field Operations Department is responsible for paving or stabilizing public roads owned by the City. Funding for the implementation of this measure is determined in the City's annual budgeting process. The City does not currently have any unpaved public roads. This measure will be implemented administratively. The Field Operations Department will monitor the situation and document progress made in implementing this measure. The City will prepare and submit progress reports, when requested by outside agencies.

2007 ■ City of Goodyear indicates that the City has paved all existing alleys within its jurisdiction. No new alleys are permitted to be developed within the City unless they are paved and maintained by the Home Owners Association, (HOA). The City currently has 5.34 miles of unpaved roadways that meet the 50 vehicles per day requirement for stabilization. The City will inventory and acquire traffic count data for all newly annexed roadways to determine if they meet the 50 vehicle per day requirement. This measure will be implemented by the City of Goodyear Public Works Department. The City of Goodyear will schedule surface treatments for unpaved roadways that meet the 50 vehicle per day requirement in FY 07-08 if MAG funding is awarded. If funding is not awarded for these projects they will be recommended in the FY 08-09 budget. These projects will take approximately six months. The City will procure a consultant to provide traffic counts on all unpaved roadways in FY 08-09. The Public Works Department will provide an inventory of all unpaved roadways to include traffic counts. All unpaved roadways that receive surface treatments will be documented and sent in to the appropriate agency. Any additional roadways that meet the 50 vehicles per day requirement in the future will be scheduled for surface treatments in the following fiscal year.

2007 ■ Town of Guadalupe indicates that all streets in Guadalupe are paved. Alleys exist throughout town and a study will be taken to determine the extent these alleys add to the PM-10 problem and to determine the best option to stabilize these alleys. The Town of Guadalupe Public Works Department through the authority granted to them by A.R.S. Section 9-240 is responsible for implementation. The study will be completed by December 31, 2007. Stabilization will be phased in beginning March 1, 2008. The study will be conducted by current department personnel under the FY 2008 budget. Administration and implementation of the measure will be conducted by current department personnel and included as part of the departmental personnel budget for future fiscal years. Funding to stabilize town owned alleys will need to be included in the budget for future years. The enforcement function will be staffed and administered under the Public Works Department. The Public

Works Director (building inspector) will monitor the application and the effectiveness of the dust control agent.

2007 ■ City of Litchfield Park indicates that the City will continue to require paving or stabilization of all public roads in the City's jurisdiction, or shall be constructed to a standard approved by the city engineer. The City of Litchfield Park Public Works Department through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. The City will begin paving the dirt alleys within the City beginning Fiscal Year 2008. The City Council recently approved Resolution 06-238 related to paving dirt roads and alleys. The Maricopa Association of Governments (MAG) Management Committee approved Litchfield Park's application for FY 2008 CMAQ (Congestion Mitigation Air Quality) funding to pave the unpaved alleys in the City. The total estimated project cost is \$758,541; with CMAQ funding of \$530,979, which covers 70% of the estimated project cost. The City has budgeted funds in the Capital Improvement Project for this project. Code Enforcement will address any noncompliance through their normal procedures. Exceptions are only allowed where there is no paved street between the subdivision and a paved major or collector street, an interim two lane street at least twenty-four feet wide shall be constructed to a standard approved by the city engineer on the major street, collector or local street right-of-way to the nearest paved major or collector street.

2007 ■ City of Mesa indicates that in 1998, the City of Mesa committed to stabilizing and/or paving unpaved roads and alleys. The City of Mesa currently has less than 1 mile of unpaved roads, and has stopped using alleys for Solid Waste vehicles. The termination of the use of alleys for Solid Waste vehicles has reduced the average daily trips in alleys and therefore, they are stable longer and produce less emissions. The City's program to stabilize unpaved roads and alleys will be updated to specify that prioritization will be given to unpaved roads and alleys with an estimated traffic volume of over 50 trips per day.

The City of Mesa has also adopted an alley abandonment program that will allow residents to have ownership of the alleys. As part of the alley abandonment program, gates will be installed at entrances to the alleys and access will be restricted to property owners and utility service vehicles. This program will help reduce the number of unpaved alleys with over 50 trips per day. The City of Mesa Transportation Department is responsible for paving and dust proofing City streets and evaluating effective dust suppressants. The Environmental Programs Division has worked with the Transportation Department to develop an inventory and prioritization of unpaved roads and alleys. Arizona Revised Statute, Section 9-240, General Powers of Common Councils. Mesa City Charter, Article I: Powers of the City.

Inventory of unpaved roads and alleys is conducted annually and they are inspected periodically to determine if they are in need of stabilization. Funding

for personnel and resources is allocated through the annual budget process. In January 2007, the City of Mesa started collecting an Environmental Compliance fee that will be used, in part, to pay for stabilization of unpaved roads, and alleys. The City has budgeted approximately \$150,000 for stabilization of roads and alleys in the FY 06/07 budget. In FY 07/08 the City of Mesa will implement a pilot alley abandonment program. As part of this program all fees associated with the program will be eliminated and \$20,000 will be used to purchase and install fences that will limit access in the alleys. Arizona Revised Statute, Section 49-406, grants Maricopa County and the ADEQ the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Peoria indicates that the city currently has all its known public roads and alleys paved or stabilized within its jurisdiction. The City of Peoria will inventory, and if necessary, provide data to confirm that all public dirt roads and alleys are now paved to minimum stabilization standards. The Public Works Department is responsible for implementation of the measure. The City of Peoria (Public Works Department) will inventory all public roads within its jurisdiction, and provide a list to the appropriate agency by August 2007. If it is found that there are dirt roads or alleys which need to be paved or stabilized, it will be completed by July 2008. The Public Works Department will provide two staff members to inventory all existing dirt roads and alleys. If a road or alley requires paving, the City of Peoria will utilize in-house staff or a contractor for paving. The Public Works Department will provide an inventory to ensure all existing public dirt roads and alleys are stabilized to standards or paved. This list will be provided to the appropriate agency for documentation. If a public road or alley is found unpaved, a schedule will be provided to Maricopa County to ensure that the road or alley is paved by July 2008.

2007 ■ City of Phoenix indicates that in compliance with Arizona Revised Statute (A.R.S.), Section 9-500.04, the City of Phoenix has developed plans, and continues to implement programs, to pave or stabilize targeted unpaved roads and alleys. The plans include criteria for targeting/prioritizing roads and alleys, such as traffic volumes, heavy truck traffic, PM-10 concentrations, etc. (see Implementation Schedule section below for additional detail.)

Roads: in 1999, the City identified all City-owned unpaved roads (approximately 70 miles) and applied asphalt treatment. The City is currently conducting an inventory of all City right-of-way (ROW) to update the GIS system and to identify unpaved ROWs that are being used as a cut-through or roadway. As these "new" roads are identified they will be prioritized and scheduled for stabilization with asphalt, rock, or some other stabilization treatment.

The City's program to stabilize existing dirt roads will be updated to specify that the targeting/prioritization process will include consideration of roads with

an estimated traffic volume of more than 50 trips per day. Traffic volumes, heavy truck traffic and PM-10 concentrations will continue to be considered as well.

Alleys: City alleys are stabilized with either asphalt treatment, rock product, or other treatment. Since 2002 approximately 265 miles of alleys have been upgraded to asphalt treatment.

Road Improvement Standards: Phoenix City Code, Section 31.91-Streets and Sidewalks and Section 32.33-Subdivisions, require that residential, industrial, and commercial developments design and construct right-of-way improvements to meet City standards including, but not limited to, paving, curb, gutter, and sidewalk. The specific standards are maintained in the City of Phoenix Supplement to the Maricopa Association of Governments Uniform Standard Specifications. The standards allow for certain exceptions consistent with other portions of chapters 31 and 32 and other applicable laws.

Implementing Agency or City Department:

City of Phoenix, Street Transportation Department
City of Phoenix, Development Services Department

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council

Phoenix City Charter, Chapter 2: General Powers, Rights, and Liabilities

References to Codes & Ordinances:

A.R.S., Section 9-500.04, Air Quality Control-Cities and Towns
Phoenix City Code, Section 31-91: Street Dedication and Improvement Requirements
Phoenix City Code, Section 32-33: Subdivisions-Street and Utility Improvement Requirements
City of Phoenix, Supplement to the Maricopa Association of Governments Uniform Standard Specifications

Implementation Schedule: The plan for stabilizing roads alleys will be updated by December 31, 2007. The schedule for paving and stabilizing unpaved roads and alleys is listed below. Traffic volume on roads that are scheduled to be paved or stabilized will be estimated as the new roads identified.

Roads: Length and costs will vary based upon final surveys, design, and construction costs.

Fiscal Year	Length (Center-lane miles =2/lane/mile)		City Funds	Federal Funds	Total Cost
Asphalt					
2006/2007	≈0.25		225,000	0	225,000
2007/2008	≈3.25		700,000	933,333	1,633,333
2008/2009	≈3.0		450,000	1,050,000	1,500,00
2009/2010	TBD		500,000		500,000
Total Roads	≈6.5 mi.		\$1,875,000	\$1,983,333	\$3,858,333

Alleys: Length and costs will vary based upon final surveys, design, and final construction costs.

Fiscal Year	Length (Linear Miles = lane//mile)		City Funds	Federal Funds	Total Cost
Asphalt					
2006/2007	≈9.0		\$390,000	0	390,00
2007/2008	≈45.0		\$548,100	\$1,278,900	1,827,000
2008/2009	≈18.0		\$200,000	\$466,667	666,667
2009/2010	TBD		(Note 1)		(Note 1)
Stabilization					
2006/2007	Millings to be applied as they become available				(Note 2)
2007/2008	Millings to be applied as they become available				(Note 2)
2008/2009	Millings to be applied as they become available				(Note 2)
2009/2010	Millings to be applied as they become available				(Note 2)
Total Alleys	≈72 mi.		\$1,138,100	\$1,745,567	2,883,667

All dollar totals include design, administration and construction.

Note 1: Funds in this budget are jointly utilized for alley treatments and purchase of street sweepers. Estimated allocations are not feasible at this time. Total budget is \$418,000.

Note 2: Millings are funded from the Street Transportation Department, Preventive Maintenance materials budget and is not listed as a separate budget allocation.

City of Phoenix, Development Services Department & the Street Transportation Department enforce the street standards for new roads. A.R.S. Section 49-406, grants Maricopa County Air Quality Department and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit reports to the state and/or county agencies upon request.

2007 ■ Town of Queen Creek indicates that the Town will continue to require paving of all public roads in the Town's jurisdiction. The Town Subdivision Ordinance requires public access, and therefore paved surfaces, to all properties prior to issuing a building permit. The Town of Queen Creek Community Development Department, through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. There are no existing dirt roads or alleys with traffic in excess of 50 vehicles per day.

2007 ■ City of Scottsdale indicates that this measure would revise County Rule 310.01 to require paving or stabilizing of public dirt roads that carry less than 150 vehicles per day (e.g. more than 50 vehicles per day). The City of Scottsdale currently stabilizes approximately 13 miles of unpaved roads and 89 miles of alleys as part of the city's unpaved road grading and dust control program and the alley maintenance program. These figures represent about 35% of the total inventory of unpaved roads (approximately 41 miles) and 100% of the unpaved alleys in the city. Over the past five years, the City has paved approximately 9 miles of unpaved roads and <1 mile of alleys.

The City budgeted to continue maintenance and stabilization of unpaved alleys and stabilization of unpaved roads down to approximately 100 ADT for Fiscal Year 2007/2008. In 1999, the City of Scottsdale developed and implemented plans to stabilize targeted unpaved roads, alleys and shoulders on targeted arterials. That plan has been revised in 2007 to prioritize unpaved roads with more than 100 average daily trips and unpaved shoulders on arterial roads and other segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume.

Responsible Agency and Authority for Implementation:

City of Scottsdale Municipal Services Department
City of Scottsdale Environmental and Preservation Office

Authority for Implementation

A.R.S. Section 9-240: General Powers of Common Council.
A.R.S., Section 9-500.04 Air Quality Control
Scottsdale City Charter, Article I, Sec. 3: Powers of City
City of Scottsdale Design Standards and Policy Manual

Ongoing implementation. The City's Municipal Services Department is responsible for the planning, construction, repair and maintenance of city streets and alleys, and is adequately staffed to implement this measure. The budget for the current fiscal year is approximately \$300,000 for alley maintenance/dust control and \$910,000 for unpaved road maintenance /dust control. For the Fiscal Year 2007/2008 budget, \$50,000 was added to the existing unpaved road maintenance/dust control budget. The City's Municipal Services Department General Manager is responsible to implement this measure. The City will submit reports to state and/or county agencies upon request. Currently, the City maintains web pages detailing the unpaved roads and alleys dust control program, on the city's web site at www.scottsdaleaz.gov.

2007 ■ City of Surprise indicates that the City has no dedicated City-owned dirt roads. The City will apply dust-proof prevention materials on approximately 3.1 miles of unpaved alleys. The City of Surprise Public Works Department, Streets Division is responsible for implementation. The stabilization plan for alleys and roads will be updated by January 1, 2008. Funding will be provided through the 10% set aside fund/or Public Works Department, Streets Division budget. Approximately \$65,000 will be spent to apply a dust-proof material on City alleys. City of Surprise Community Development, Planning Department and City of Surprise Engineering Department enforce the street standards for new roads. The City will submit reports to State and/or County agencies upon request.

2007 ■ City of Tempe indicates that Tempe's street system is comprised of 473 center line miles of arterial (88 miles), local (308 miles), collector (41 miles), industrial (35 miles) and unimproved (.9 miles). Staff will identify the less than one mile of roadway that requires stabilizing and pave or stabilize as appropriate. The City's alley system is comprised of approximately 165 miles of unpaved alleys, and approximately 15 miles of paved alleys. Since February 2003 the City has stabilized, with recycled asphalt, approximately 25 miles of the unpaved alleys. Staff indicates that all remaining unpaved alleys experience significantly less than 50 vehicle trips per day. However, a staff analysis will be underway within sixty days to conduct traffic counts on a random sample of our unpaved alleys to verify that assumption. By city ordinance, all city alleys that are used to access parking are to be dustproofed. The majority of our alleys are used for public utility easements and are not used for transportation purposes.

The City of Tempe's Public Works Department is responsible for implementing this measure. The less than one center line mile of unimproved roadway will be stabilized or paved during fiscal year 2007-08. If the traffic count analysis identifies alleys that exceed 50 vehicle trips per day, these alleys will be a high priority and will be scheduled for stabilization beginning in 2007-08. Adequate resources exist in the City's operating and CIP budget to meet the schedule indicated above. Maricopa County and ADEQ have the authority to enforce measures identified in the nonattainment area plans. The City of Tempe Public

Works Department will monitor progress toward meeting this commitment, and will submit progress reports on measure implementation to the MCESD, ADEQ, or MAG upon request.

Section. 29-3. Dustproofing alleys.

- (a) All alleys used by vehicular traffic for access to abutting parking areas within the city shall be maintained in a dust-free condition by using the property owners. Upon the failure of using property owners to properly maintain an alley in a dust-free condition, the city manager may recommend to the city council that a particular alleyway or portion thereof be dustproofed at the expense of those abutting property owners using the alley for access to their parking areas. Upon approval by the city council, the city manager shall send or cause to be sent a written notice by certified mail to the owners of record adjacent to such alley or portion thereof to abate the condition. If such owners of record to whom written notice has been sent neglect, fail or refuse for more than sixty (60) days from the date mailing such notice to dustproof such alley or portion thereof to the satisfaction of the public works manager, the city council may direct the city manager to cause the alley to be dustproofed and to charge the abutting property owners using the alley for vehicular access to their property, such charge to be prorated on a frontage basis.
- (b) Within thirty (30) days after the necessary dustproofing has been completed and the cost of same determined by the city, the public works manager shall send written notice to the abutting property owners of their pro rata share of the cost of such dustproofing.

2007 ■ City of Tolleson indicates that the City will continue to pave and/or stabilize existing dirt roads and alleys. The City currently does not have any dirt roads or alleys that have traffic in excess of 50 vehicles per day. The City of Tolleson Public Works Department, through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. There are no existing dirt roads or alleys with traffic in excess of 50 vehicles per day.

2007 ■ Town of Youngtown indicates that Youngtown has only one unpaved dirt road (115th Ave), of which the County owns the first 400 ft. off the main roadway (Olive Ave). Commercial business (landfill) maintains and stabilizes the entire roadway. Youngtown has 8.5 miles of unpaved alleys, with utilities placed less than 12 inches below surface. Youngtown continues to stabilize the surface, but is seeking funds to attack this issue. Estimated cost to pave alleys- \$1 million and Youngtown is seeking funding for the project. Authority for implementation is Youngtown Code-Chapter 8.20.010 to .050; 8.24.020; 8.28.010 to .030. Youngtown General Plan Chapter 7 Environmental Element.

This measure is implemented and ongoing. Personnel and funding allocated for implementation in the Public Works Budget. Public Works Director and Code Compliance Officer enforce the program. The Town will periodically monitor road and alley surfaces.

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will update Rule 310.01 and may include the following provisions:

- Track out provisions for nonpermitted sources.
- Lower the threshold (vehicles per day) and specify criteria that trigger the requirement to pave or stabilize public dirt roads.
- Reasonable written notice to the owner that the unpaved disturbed surface of a vacant lot is required to be stabilized. Authority for the county to enter the lot to stabilize the disturbed surface at the expense of the owner if the vacant lot has not been stabilized by the day set for compliance. Methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for a violation of this section. [Senate Bill 1552 A.R.S. § 49-474.01 (A)(11)]
- Property line provisions for nonpermitted sources.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 474.01(A)(11) requires adoption of rule provisions by March 31, 2008, and enforcement of the provisions by October 1, 2008, regarding stabilization of disturbed surfaces of vacant lots that include written notice to the owner that a vacant lot is required to be stabilized, authority for the county to enter the lot to stabilize at the expense of the owner, methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for violations.

Implementation Schedule:

Rule 310.01 Revisions:

April 2007 - Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. Maricopa County Measure #4 describes existing and new dust control vacant lot personnel the Air Quality Department will seek to hire to address increased enforcement of Rule 310.01 for vacant lots. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measure(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Senate Bill 1552 authorized the county to enter the lot to stabilize the disturbed surface, issue notices of violation, and collect monetary penalties that include the cost of stabilization. The Air Quality Department tracks the number of vacant lot inspections, number of enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310.01.

- 2007 ■ Maricopa County indicates that this measure will update a plan for paving or stabilizing targeted County dirt roads in compliance with Rule 310.01 and Senate Bill 1552.

Authority for Implementation:

Arizona Revised Statutes (A.R.S.) § 11-251 (General Powers of Board Supervisors)

A.R.S. § 28-6705 (Public road and street maintenance)

A.R.S. § 28-6708 (Jurisdiction of streets; unincorporated town)

A.R.S. § 49-474.01(A)(4)

Implementation Schedule:

July 2007	Current Low Volume Road Program gives priority to existing public dirt roads that carry 150 or more of vehicles per day. Approximately 19 miles of dirt roads will be paved over the next 4 fiscal years (with average ADT of 201).
December 2007	Update to plan to incorporate revisions to A.R.S. § 49-474.01(A)(4).

Currently funded at \$3 million per year. Funding is allocated through the annual budget process. MCDOT will oversee the implementation of this measure. MCDOT will submit annual progress reports to MCAQD as requested.

27. Limit speeds to 15 miles per hour on high traffic dirt roads

2007 ■ Town of Buckeye indicates that this measure would require 15 mph speed limit signs to be posted on dirt roads in the PM-10 nonattainment area that carry high traffic (e.g., 50-150 vehicles per average weekday). This measure will be implemented by the Town of Buckeye Police Department. Legal authority for this action is provided under Arizona Revised Statutes Sections 9-240(B)(3)(a) and (12). The implementation schedule is:

1. November 1, 2007 - Coordination Meeting
2. February 1, 2008 - Draft Ordinance Completed
3. March 18, 2008 - Council Workshop
4. April 15, 2008 - Public Hearing on Ordinance
5. May 6, 2008 - Council Considers Ordinance for Adoption
6. July 1, 2008- Ordinance Implementation

An equivalent of one full-time employee will be required to work with the affected departments to draft the ordinance. The estimated cost to prepare the draft ordinance and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft ordinance and support leading to adoption will be performed by current department personnel consistent with the 2007/2008 fiscal year budget. This measure will be enforced by ordinance. The enforcement function is anticipated to be staffed and administered by the Police Department. The Police Department will provide information documenting progress in

implementing the measure as a part of the quarterly report to the Town Manager. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree does not have any public dirt roads, alleys, or shoulders. The Town of Carefree allows only paved or stabilized roads, alleys or shoulders. All public roads and alleys are to be constructed to the Uniform Standard for Public Works Construction distributed by the Maricopa Association of Governments (MAG). The Town of Carefree is responsible for constructing and maintaining its roads, alleys, and shoulders. The Town of Carefree is currently maintaining its roads, alleys, and shoulders. The Town of Carefree budgets funds annually for the cost of constructing and maintaining its roads, alleys, and shoulders. The Town of Carefree administers its road, alley, and shoulder construction and maintenance programs. The Town of Carefree monitors its road, alley, and shoulder construction and maintenance programs. A copy of Section 11-1-5 of the Carefree Code of Ordinances is attached to the resolution.
- 2007 ■ Town of Cave Creek has an annual chip seal paving project by which we have been paving approximately five (5) miles of high-traffic dirt roads per year and continue to do so at the same rate. All remaining dirt roads with a traffic count above 50 vehicles per day will have a 15 miles per hour speed limit until paved. Town of Cave Creek Public Works Department Chip Seal Project is completed annually at a rate of approximately five (5) miles per year. The Town of Cave Creek budgets funds annually for the costs of paving unpaved roads through its chip seal project. The Town of Cave Creek will administer the annual chip seal project and monitor/schedule paving of remaining unpaved roads.
- 2007 ■ City of Chandler indicates that this measure would require 15 mph speed limit signs to be posted on City owned dirt roads in the PM-10 nonattainment area that carry high traffic (e.g. 50-150 vehicles per day). It is estimated that there are 1.2 miles of City owned dirt roads that carry high traffic. Legal authority for this action is provided under A.R.S. Sections 9-240, General Powers of Common Council, and Section 1.03, Charter of the City of Chandler. The City of Chandler through the Public Works Department will post speed limit signs on public dirt roads receiving more than 50 vehicles per day and the Police Department will enforce such speed limits as it does in other speed limit zones. The traffic control signs will be posted by July 1, 2007. Fabrication and erecting speed limit signs will cost \$500. This will be done by July 1, 2007.

The program will be enforced by the Police Department. Speed limits will be enforced as other speed limits are enforced through the City by random patrols. Completion of the installation of the traffic speed limit signs will be reported by

the Director of Public Works to the City Manager by August 1, 2007. The City Manager will submit the report to Maricopa County along with the annual report within 30 days of completion of the fiscal year. Maricopa County will be responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of applicable Code Sections is attached to the resolution. No Code changes are required to implement this measure.

- 2007 ■ City of El Mirage indicates that this measure would require 15 mph speed limit signs to be posted on dirt roads in the PM-10 nonattainment area that carry high traffic. The City of El Mirage would review current codes under Chapter 13: Traffic; Motor Vehicles to address 15 mph speed limits on dirt roads in the nonattainment area that carry high traffic (e.g., 50-150 vehicles per day). City of El Mirage Public Works and Police Department will review current code under Chapter 13 to present to Council for possible amendment and enforcement. A.R.S., Section 9-240: General Powers, Rights, and Liabilities. The funding for enforcement is included in the annual operating budget and is not listed as a separate allocation. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.
- 2007 ■ City of Goodyear indicates that the City currently does not have an ordinance that supports the posting of 15 miles per hour on dirt roadways. The City of Goodyear Public Works Department would be responsible for developing an ordinance for posting 15 mile an hour speed limits on dirt roads and installing the signs. The City will develop a speed limit ordinance based on a City wide traffic count study which may require additional Police Officers for enforcement. City wide traffic count and speed limit study is scheduled for FY08-09. Cost to install 15 mile per hours signs are \$185.00 each. If the funding is approved to apply the surface treatments to the unpaved roadways, no enforcement will be necessary. The Public Works Department will inventory and provide traffic count data on any unpaved roadways that meet the 50 vehicles per day requirement by June 2008.
- 2007 ■ City of Litchfield Park indicates that this measure involves dirt roads with traffic in excess of 50 vehicles per day. The City will begin paving the remaining dirt alleys in Fiscal Year 2008.
- 2007 ■ City of Peoria indicates that the City currently has the ability to request the posting of 15-mile per hour speed limits for all low volume public dirt roads in its Speed Limit Ordinance. The City of Peoria Engineering and Public Works Departments are responsible for implementation of the measure as required by City Code 23-75(e). The City of Peoria should not have any public dirt roads or alleys. However, through the Public Works Department inventory by August 2007, any unpaved or unstabilized public dirt roads or alleys will be posted. The

15-mile per hour posting will continue until such time as the paving or stabilization is complete. The Engineering Department will notify the owners of the 15-mile per hour requirement by October 2007, and they should be able to purchase a sign from the City for a nominal fee. Four staff members from the Public Works Department; two for the inventory and two to install the 15-mile per hour signs. If the City of Peoria finds that there are unpaved public roads or alleys, documentation will be made, and the implementation schedule for installing the 15-mile per hour signs will be made by the Public Works Department, through a work order system. All private roads will be documented by Engineering, and the owners will be notified of the posting of the 15-mile per hour speed limit by October 2007.

- 2007 ■ City of Phoenix indicates that the 15-mph speed limits on high traffic dirt roads are not currently used in the City of Phoenix because unpaved roads are stabilized with asphalt, rock, or other stabilization treatment. As new City-owned unpaved roads are identified in annexed land or other areas, they will be scheduled for stabilization, or paving. Priority will be given to roads with more than 50 trips per day. If stabilization or paving will be delayed, the City will determine if limiting speeds to not less than 15 miles-per-hour is necessary to maintain the ambient air quality standards.

Implementing Agency or City Department:

City of Phoenix, Street Transportation Department

Authority for Implementation:

A.R.S., Section 9-240: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights, and
Liabilities

References to Codes & Ordinances:

A.R.S., Section 28-626, Uniform Application of Laws throughout
the State
A.R.S., Section 28-627, Powers of Local Authorities
A.R.S., Section 28-703, Alteration of Speed Limit by Local Authority

The City does not anticipate the need for installing 15 mph signs on high-traffic roads based upon the program to schedule paving or stabilization for unpaved roads as they are identified. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Scottsdale indicates that this measure would require 15 mph speed signs to be posted on dirt roads in the PM-10 nonattainment area that carry high traffic (e.g. 50-150 vehicles per day). The City of Scottsdale will lower the speed limit to no lower than 15 mph on unpaved roads with 100 ADT (Average daily traffic) or more during Fiscal Year 2007/2008. Currently, the City estimates that this will effect speed limits on approximately 15 miles of unpaved roads. Appropriate speed limit signs will be posted on unpaved roads as applicable. The Scottsdale Police Department enforces speed limits throughout the city.

Responsible Agency and Authority for Implementation:

City of Scottsdale Transportation General Manager
City of Scottsdale Police Department

Authority for Implementation:

A.R.S. 9-240: General Powers of Council
A.R.S., Section 28-626, Uniform Application of Laws throughout the State
A.R.S., Section 28-627, Powers of Local Authorities
A.R.S., Section 28-703, Alteration of Speed Limit by Local Authority
Scottsdale City Charter, Article I, Sec. 3: Powers of City
Scottsdale Revised Code, Chapter 17, Article XXI, Section 17-1001

During Fiscal Year 2007/2008, speed limits on unpaved roads will be altered. Funding for implementation and enforcement is included in the annual operating budget for the departments listed above and is not listed as a separate budget allocation. The Police Department enforces traffic laws. The City will submit reports to state and/or county agencies upon request.

- 2007 ■ Town of Youngtown indicates that Youngtown does not have high traffic dirt roads, BUT does enforce 10 mph on the unpaved alleys. Inventory to be completed confirming that all 10 mph signs are posted in the alleys. The Police Department in communication and cooperation with the Public Works Department is responsible for implementation. The measure is implemented through ongoing enforcement and an inventory of signs will be done in September 2007. Personnel and funding allocated for implementation in the budgets for the Public Works Department and Police Department. The Police Department enforces through citations. The Town will periodically monitor the placement of signage.
- 2007 ■ Maricopa County indicates that this measure would require 15 mph speed limit signs to be posted on dirt roads in the PM₁₀ nonattainment area that carry more than 50 ADT. Due to limitations in the Manual for Uniform Traffic Control

Devices, in some cases it will not be possible to lower the limit more than 10 mph under the existing limit, which may be as high as 55 mph.

Authority for Implementation:

Arizona Revised Statutes (A.R.S.) § 11-251 (General Powers of Board Supervisors)

A.R.S. § 28-6705 (Public road and street maintenance)

A.R.S. § 28-6708 (Jurisdiction of streets; unincorporated town)

A.R.S. § 28-703 (Alteration of speed limits by local authority)

Implementation Schedule:

July 2007 Establish criteria to post appropriate speed limits on select roads.

Sept.-December 2007 Install speed limit signs on selected roads.

Funding is allocated through the annual budget process. An estimated \$250,000 for initial sign installation will be required, and an additional \$85,000 per year for sign maintenance and replacement would be needed. No additional personnel are anticipated. Maricopa County Sheriff will be responsible for enforcement. The percentage of county maintained dirt roads with speed limit signs installed will be monitored.

28. Pave or stabilize unpaved shoulders

2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a city or town in Area A, beginning on January 1, 2008 to develop and implement plans to stabilize targeted unpaved roads, alleys and unpaved shoulders on targeted arterials. The plans shall address the performance goals, the criteria for targeting the roads, alleys and shoulders, a schedule for implementation, funding options and reporting requirements. Priority shall be given to the following: (a) Unpaved roads with more than one hundred average daily trips. (b) Unpaved shoulders on arterial roads and other road segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume (A.R.S. § 9-500.04 A.3.).

S.B. 1552 requires a county which contains any portion of Area A, beginning on January 1, 2008 to develop and implement plans to stabilize targeted unpaved roads, alleys and unpaved shoulders on targeted arterials. The plans shall address the performance goals, the criteria for targeting the roads, alleys and shoulders, a schedule for implementation, funding options and reporting requirements. Priority shall be given to the following: (a) Unpaved roads with more than one hundred average daily trips. (b) Unpaved shoulders on arterial

roads and other road segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume (A.R.S. § 49-474.01 A.4.).

S.B. 1552 allows counties to use petroleum based or nonpetroleum based products in the maintenance and repair of unpaved roads, alleys, and shoulders identified pursuant to A.R.S. § 9-500.04 and § 49.474.01 or unpaved roads, alleys, and shoulders in any county where the control officer certifies to the Board of Supervisors that emissions from such roads, alleys or shoulders endanger compliance with the national ambient air quality standard (A.R.S. § 28-6705 C.).

2007 ■ City of Apache Junction will conduct an inventory of all dedicated roads with dirt shoulders to identify those dedicated roads with an Average Daily Traffic ("ADT") of 2,000+ vehicles. Once the inventory is complete, the City will stabilize an estimated four lane miles of shoulders with recycled asphalt millings at an average width of eight feet. Shoulder stabilization will be performed twice a year on the identified segments. This measure will be implemented by the City of Apache Junction Public Works Department. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation schedule is:

1. December 29, 2007- Complete inventory of dedicated roads with dirt shoulders with an "ADT" of 2,000+.
2. February 29, 2008- Complete the stabilization of an estimated four lane miles of dedicated roads with shoulders by an average of eight feet wide.

The estimated cost for the initial inventory and stabilization of an estimated four lane miles of existing dedicated roads with dirt shoulders for the fulfillment of this measure will require an additional cost of \$30,000. The inventory and initial stabilization of shoulders will be accomplished by current department personnel and resources under the adopted city budget for FY 07-08. The cost of maintaining four lane miles of stabilized dirt shoulders twice per year is estimated at \$15,000. Additional resources to maintain the stabilization beyond FY 07-08 will be requested in future Public Works Department budgets. This measure will be staffed and administered under the Public Works Department. Progress in implementing the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. Progress reports and plans will be forwarded to Maricopa County and/or MAG per any progress request.

2007 ■ City of Avondale indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (e.g., 2,000 vehicles or 50 heavy duty trucks per average weekday). Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council

and the Avondale Charter. The City of Avondale will be hiring a pavement management technician this fiscal year (2008) to inventory all the streets assets to assist with complying with this measure. Maintenance will be scheduled on a five-year plan and linked to the Capital Improvement Plan for funding. The Field Operations Department is responsible for paving or stabilizing unpaved shoulders. The City has budgeted for a new hire. The Fields Operations Department is responsible for implementing this measure administratively. The Field Operations Department will monitor the situation and document progress made. The City will prepare and submit progress reports, when requested by other agencies.

- 2007 ■ Town of Buckeye indicates that this measure would require the paving or stabilizing of dirt shoulders on paved public roads that carry a high level of traffic, i.e., more than 2000 vehicles or 50 heavy duty trucks per average weekday. This measure will be implemented by the Town of Buckeye Public Works Department. Legal authority for this action is provided under Arizona Revised Statutes Sections 9-240(A) and (B)(3). The development of a life cycle program will be initiated during the 2007/2008 fiscal year. Implementation of the life cycle program is planned to begin July 1, 2008. Road projects will be dependant on criteria identified in the life cycle program and on available funding for Capital Improvement Projects.

The Town will employ an equivalent of one consulting firm to work with the affected departments to draft the life cycle program. The estimated cost to prepare the draft plan and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft plan will be performed by current department resources allocated with the 2007/2008 fiscal year budget. This measure will be incorporated into a road life cycle program. The enforcement function will be staffed and administered under the Public Works Department. The Public Works Department will provide a report of the progress in implementing this measure with its budget requests for the subsequent fiscal year. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the Capital Improvement Plan, if approved by Council, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree does not have any public dirt roads, alleys, or shoulders. The Town of Carefree allows only paved or stabilized roads, alleys or shoulders. All public roads and alleys are to be constructed to the Uniform Standard for Public Works Construction distributed by the Maricopa Association of Governments (MAG). The Town of Carefree is responsible for constructing and maintaining its roads, alleys, and shoulders. The Town of Carefree is currently maintaining its roads, alleys, and shoulders. The Town of Carefree budget funds annually

for the cost of constructing and maintaining its roads, alleys, and shoulders. The Town of Carefree administers its road, alley, and shoulder construction and maintenance programs. The Town of Carefree monitors its road, alley, and shoulder construction and maintenance programs. A copy of Section 11-1-5 of the Carefree Code of Ordinances is attached in the resolution.

2007 ■ Town of Cave Creek seeks to have any unpaved shoulders revegetate naturally to discourage off-road traffic and to also assist in controlling dust levels on roadways. Collector streets shoulders are stabilized with dust control (Dust-Tac) on a regular schedule (bi-monthly/every 2 months) or as required depending on the circumstances and conditions. Town of Cave Creek Public Works Department is responsible for implementation. Dust Control is performed on areas of unpaved unrevegetated shoulders during our dust control regular schedule (bi-month/every 2 months) or as conditions change. The Town of Cave Creek budget funds annually for the costs of applying dust control on a regular schedule (bi-monthly/every 2 months). The Town of Cave Creek will administer the regular scheduled dust control program on a bi-monthly/every 2 months schedule or as conditions and circumstances change the requirement.

2007 ■ City of Chandler indicates that this measure will pave or stabilize dirt shoulders on paved public roads that carry a high level of traffic (e.g., more than 2,000 vehicles or 50 heavy trucks per average weekday). Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council and Section 1.03 Charter of the City of Chandler. The City of Chandler through its Public Works Department recently developed an inventory of streets with more than 2,000 vehicles or 50 heavy trucks per average weekday. The City currently has approximately 1566 miles of shoulder, or approximately 97% of all City shoulders, that are currently paved or stabilized. The remaining roadway edges include approximately 57 miles of shoulders without curb and gutter. About seven (7) miles of shoulder are already paved or stabilized but without curb and gutter. Of the 50 remaining miles of unimproved shoulders, the City will be constructing 14.7 linear miles with full curb and gutter and improving the shoulder of the remaining 35 miles with an eight foot wide stabilized shoulder constructed of aggregate or asphalt millings. This will be accomplished over a three-year period. The Public Works Director will identify a Project Manager who will oversee construction of these measures and will report progress to the City Manager. The implementation schedule is:

1. June 30, 2008 12 miles of shoulder stabilized and 5 miles of curb and gutter constructed.
2. June 30, 2009 12 miles of shoulder stabilized and 5 miles of curb and gutter constructed.

3. June 30, 2010 11 miles of shoulder stabilized and 4.7 miles of curb and gutter constructed.

Road improvements for the 14.7 miles of road to be fully improved including design and construction for paving the full 6 lanes with improvements totals \$69,313,000. Road improvements for shoulders that include applying aggregate or asphalt millings eight feet wide to the remaining 36 miles of unimproved shoulders will cost approximately \$1,311,000. The program will be implemented by the Public Works Department. Progress of construction will be reported by the Public Works Project Manager to the City Manager as to the number of miles of shoulders improved by applying aggregate or asphalt millings and the number of miles of curb and gutter improvement made to existing roads. This report will be sent to the City Manager by the end of the fiscal year. The City Manager's office will forward this report to Maricopa County within 30 days of completion of the fiscal year. Maricopa County will be responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of applicable Code Sections is attached to the resolution. No Code changes are required to implement this measure.

2007 ■ City of El Mirage indicates that this measure would require all unpaved shoulders to be paved or stabilized on targeted roads with high traffic volumes and heavy truck traffic. The Public Works Department currently is stabilizing all unpaved shoulders on the four main high traffic areas with Soiltac® an environmental friendly polymer-based emulsion that is PM-10 compliant. City of El Mirage Public Works Department is responsible for implementation. A.R.S. 9-240, General Power of Council. Stabilization of unpaved shoulders began in May 2007 and will be completed by the end of June 2007. This will be an ongoing annual application. The unpaved shoulders cover an area of 633,600 square feet at a cost of \$28,883.01. All costs include product and application. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Fountain Hills indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (e.g., 2000 vehicles or 50 heavy duty trucks per average weekday). The Town Public Department will enforce this item. Maintenance will be scheduled on a five-year plan and linked to the Capital Improvement Plan for funding. The Town will include \$50,000 in the budget for stabilizing shoulders. The enforcement function will be staffed and administered by the Public Works Department. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Gilbert indicates that the Town has committed to reducing particulate emissions by paving or stabilizing unpaved shoulders. The Town's plan requires residential, industrial, and commercial developments to design and construct right-of-way improvements to meet Town standards including, but not limited to paving, curb, gutter, and sidewalk. The Town currently has 38 miles of unpaved shoulders bordering primarily rural roads. The pace at which these roads and shoulders are transitioning to arterial roads fronting new developments is very rapid. In addition, the Town utilizes approved methods of stabilization for any unpaved shoulders not currently under development by developers. The Town's plan to stabilize shoulders will be updated to specify that the targeting and prioritization process will include consideration of unpaved shoulders on arterial roads and other segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volumes. Shoulders on roads with more than 2,000 trips per day will also be considered in the targeting/prioritization process. Traffic volumes, heavy truck traffic and PM-10 concentrations will be considered as well.

The Implementing Agency and Authority for Implementation are as follows:

Town of Gilbert, Public Works Department
Town of Gilbert, Development Services Department
A.R.S., Section 9-240: General Powers of Council
Code of Gilbert Arizona, Section 1-37: Corporate Powers

Shoulders are inspected periodically to determine the need for stabilization. Stabilization occurs on quarterly basis. The schedule for improvement of roadways with unpaved shoulders to be completed by developers is ongoing and can be monitored through the Transportation Improvement Plan with MAG and the Town's planning and development process. Funding for personnel and resources is allocated through the annual budget process for each department. Developer plans are approved through the Development Services Department. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Glendale indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (e.g., 2000 vehicles or 50 heavy duty trucks per average weekday). Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Glendale Charter. The city intends to stabilize four curb miles of unpaved shoulders beginning in 2008. The City's inventory of unpaved shoulders is also being reduced as streets are fully improved to city standards (curb, gutter, and sidewalk) as urban development occurs on adjacent property. The Field Operations Department is responsible for paving or stabilizing

unpaved shoulders. The City has budgeted \$11,000 for dust control on unpaved shoulders in FY 2007-2008. Future funding for the implementation of this measure is determined in the city's annual budgeting process. This measure will be implemented administratively. The Field Operations Department will monitor the situation and document progress made in implementing this measure. The City will prepare and submit progress reports, when requested by outside agencies.

- 2007 ■ The City of Goodyear indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic, more than 2000 vehicles or 50 heavy duty trucks per average weekday. The City of Goodyear Public Works Department has identified nine centerline miles of roadways that have unpaved shoulders with no curb and gutter that meet the requirement of 2000 vehicles or 50 heavy duty trucks per average weekday. The City of Goodyear will schedule surface treatments for unpaved shoulders that meet the 2000 vehicles or 50 heavy duty trucks per average weekday requirement in FY 07-08 if MAG funding is awarded. If funding is not awarded for these projects they will be recommended in the FY 08-09 budget. These projects will take approximately six months. The Public Works Department will inventory and provide traffic count data on dirt shoulders on paved public roads that carry a high level of traffic, more than 2000 vehicles or 50 heavy duty trucks, per average weekday by June 2008.
- 2007 ■ Town of Guadalupe indicates that all streets in Guadalupe are paved but many do not have curb and gutter and so there is an area of unpaved road from the edge of the asphalt to the road right of way. These are narrow areas and do not generate much, if any dust. The Town of Guadalupe Public Works Department, through the authority granted to them by A.R.S. Section 9-240 is responsible for implementation. A study will be taken to determine if these areas pose a serious PM-10 problem and how best to stabilize these road shoulders. The study will be completed by December 31, 2007. Stabilization will be phased in beginning March 1, 2008. The study will be conducted by current department personnel under the FY 2008 budget. Administration and implementation of the measure will be conducted by current department personnel and included as part of the departmental personnel budget for future fiscal years. Funding to stabilize unpaved shoulders of the roads will need to be included in the budgets for future years. The Public Works Director (building inspector) will monitor the application and the effectiveness of the stabilization products used.
- 2007 ■ City of Litchfield Park indicates that this measure involves paving or stabilizing dirt shoulders on paved public roads with more than 2000 vehicles or 50 heavy duty trucks per average weekday. The public roads that have more than 2,000 vehicles or 50 heavy duty trucks per day average currently have stabilized

unpaved shoulders. The Streets Supervisor will monitor any application and the effectiveness of dust control agent and make arrangements for reapplication at needed intervals.

- 2007 ■ City of Mesa indicates that in 1998, the City of Mesa committed to stabilizing and/or paving unpaved shoulders. The City of Mesa currently has approximately 64 miles of unpaved shoulders and the City of Mesa continues to implement stabilization plans for these unpaved shoulders. The City's program to stabilize unpaved shoulders will be updated to specify that prioritization will be given to shoulders with an estimated traffic volume of over 50 trips per day. The City of Mesa Transportation Department is responsible for paving and dust proofing City streets and evaluating effective dust suppressants. The Environmental Programs Division has worked with the Transportation Department to develop an inventory and prioritization of unpaved shoulders and access points. Arizona Revised Statute, Section 9-240, General Powers of Common Councils. Mesa City Charter, Article I: Powers of the City.

The inventory of unpaved shoulders is conducted annually and they are inspected periodically to determine if they are in need of stabilization. Over the past several years the City of Mesa has applied a dust palliative to stabilize an average of 47 miles of unpaved shoulders per year. Funding for personnel and resources is allocated through the annual budget process. In January 2007, the City of Mesa started collecting a Federal Environmental Compliance fee that will be used, in part, to pay for stabilization of unpaved shoulders. The City has budgeted approximately \$150,000 for stabilization of roads, shoulders and alleys in the FY 06/07 budget. Arizona Revised Statute, Section 49-406, grants Maricopa County and the ADEQ the authority to enforce measures defined in the Non-attainment Area Plans. The City of Mesa will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Peoria indicates that this measure will require paving or stabilizing dirt shoulders on paved public roads that carry more than 2000 vehicles or 50 heavy duty trucks per average weekday. The City of Peoria, Public Works Department is responsible for the implementation of this measure. By December 2007, the Public Works Department will inventory all City of Peoria public roads that have unpaved shoulders (no curb and gutter). Based on that inventory, the Public Works Department will initiate a schedule, effective January 2008, to pave or stabilize all unpaved shoulders. This implementation will take approximately six months. The Public Works Department will provide two staff members to do the inventory, and three to four staff members to do the stabilization. The Public Works Department will provide an inventory of all unpaved shoulders, and provide an implementation schedule for stabilizing the shoulders to Maricopa County.

- 2007 ■ City of Phoenix indicates that for Existing Shoulders: In compliance with Arizona Revised Statute (A.R.S.), Section 9-500.04, the City of Phoenix has developed plans, and continues to implement programs, to pave or stabilize unpaved shoulders on targeted arterial streets. The plan includes criteria for targeting/prioritizing roads such as traffic volumes, heavy truck traffic, PM-10 concentrations, etc. (see Implementation Schedule section below for additional detail.) Stabilization for targeted shoulders includes asphalt, rock , or other treatments on shoulders as well as curb and gutter. Asphalt right turn lanes have also been added to high-priority intersections with heavy traffic volumes. The City's programs to pave or stabilize shoulders will be updated to specify that the targeting and prioritization process will include consideration of unpaved shoulders on arterial roads and other segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volumes. Shoulders on roads with more than 2,000 trips per day will also be considered in the targeting/prioritization process. Traffic volumes, heavy truck traffic and PM-10 concentrations will continue to be considered as well.

Road Improvement Standards: Phoenix City Code, Section 31:91-Streets and Sidewalks and Section 32.33-Subdivisions, require that residential, industrial, and commercial developments design and construct right-of-way improvements to meet City standards including, but not limited to, paving, curb, gutter, and sidewalk. The specific standards are maintained in the City of Phoenix Supplement to the Maricopa Association of Governments Uniform Standard Specifications. The standards allow for certain exceptions consistent with other portions of Chapters 31 and 32 and other applicable laws.

Units: See Implementation Schedule section below.

Implementing Agency or City Department:

City of Phoenix, Street Transportation Department
City of Phoenix, Development Services Department

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights, and Liabilities

References to Codes & Ordinances:

A.R.S., Section 9-500.04, Air Quality Control-Cities and Towns
Phoenix City Code, Section 31-91: Street Dedication and Improvement Requirements
Phoenix City Code, Section 32-33: Subdivisions-Street and Utility

Improvement Requirements
City of Phoenix, Supplement to the Maricopa Association of
Governments Uniform Standard Specifications

The plan for paving and stabilizing shoulders will be updated by December 31, 2007. The maintenance schedule for stabilized shoulders will vary based upon treatment. The schedule for paving and stabilizing unpaved roads and alleys is listed below.

Shoulders: Length and costs will vary based upon final surveys, design, and construction cost.

Fiscal Year	Length (Linear Miles = lane//mile)		City Funds	Federal Funds	Total Cost
Asphalt (≈12')					
2006/2007	≈ 2		320,000	0	320,000
2007/2008	≈ 1.5		214,100	0	214,000
2008/2009	≈ 1		200,000	0	200,000
2009/2010	TBD		200,000	0	200,000
Curb and Gutter					
2006/2007	≈ 7		375,000	0	375,000
2007/2008	≈ 8		425,000	0	425,000
2008/2009	≈ 7		375,000	0	375,000
2009/2010	≈ 7		375,000	0	375,000
Total Asphalt & C/G	≈ 33.5 mi.		\$2,484,000		\$2,484,000

All dollar totals include costs for design, administration, and construction.

City of Phoenix, Development Services Department & Street Transportation Department enforce the street standards for new roads including shoulders. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Queen Creek indicates that the Town's unpaved shoulders will be stabilized with a dust control agent. The Town of Queen Creek Public Works Department, through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. There is an estimated 52 linear miles of unpaved shoulders in the Town limits. Stabilization of the full 52 miles will be

phased in over the next 3 fiscal years. Funds of \$20,000 are included in the Town's 07/08 Budget to "contractually" stabilize the ten most heavily traveled miles of unpaved shoulders. It is anticipated that portions of the remaining 42 miles will be improved; however, funds of \$62,000 will be requested in the 08/09 Town Budget to "contractually" stabilize 31 miles of unpaved shoulders and \$104,000 will be requested in the 09/10 Town Budget to "contractually" stabilize 52 miles of unpaved shoulders. The Streets Supervisor will monitor the application and the effectiveness of the dust control agent, and make arrangements for reapplication at needed intervals.

- 2007 ■ City of Scottsdale indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry high level of traffic (e.g. more than 2,000 vehicles or 50 heavy duty trucks per weekday.)

A.R.S. § 9-500.04 required cities and towns located in the Maricopa County Nonattainment Area to develop and implement plans to stabilize targeted unpaved roads, alleys and stabilize unpaved shoulders on targeted arterials beginning January 1, 2000. The plans addressed performance goals, criteria for targeting the roads, alleys, and shoulders, a schedule for implementation, funding options and reporting requirements. The City of Scottsdale developed and implemented its plan in 1999 and currently complies with that plan's requirements.

The City will revise its current plan to place priority on unpaved roads with more than 100 ADT and unpaved shoulders on arterial roads and other road segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume. The City of Scottsdale added approximately 6 lane miles of paved shoulders, in the form of bike lanes that are at least four feet wide, to the inventory of 24 lane miles of paved shoulders/bike paths, during the past five years. The City will stabilize approximately 85 miles of unpaved shoulders, approximately three times in Fiscal Year 2007/2008.

Responsible Agency and Authority for Implementation:

City of Scottsdale Municipal Services Department
City of Scottsdale Environmental and Preservation Office

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Common Council
A.R.S., Section 9-500.04 Air Quality Control
Scottsdale City Charter, Article I, Sec. 3: Powers of City
City of Scottsdale Design Standards and Policy Manual

The City will revise its plan to begin implementation in Fiscal Year 2007/2008.

Approximately 85 lane miles of unpaved shoulders will be stabilized using dust palliatives up to three times during Fiscal Year 2007/2008. The City's Municipal Services Department General Manager is responsible for maintaining unpaved shoulders. For Fiscal Year 2007/2008, the City of Scottsdale has budgeted \$390,000 to reduce particulate pollution by stabilizing unpaved shoulders on approximately 85 lane miles of arterials. The City's Municipal Services Department General Manager is responsible to implement this measure. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Surprise indicates that the City, beginning on January 1, 2008, will develop and implement plans to stabilize targeted unpaved shoulders on targeted arterials. The plans shall address the performance goals, the criteria for targeting the shoulders, a schedule for implementation, funding options and reporting requirements. Priority shall be given to unpaved shoulders on arterial roads and other road segments where vehicle use on unpaved shoulders is evident or anticipated due to projected traffic volume. Stabilization is targeted for 9.1 miles of shoulders and includes asphalt, rock or other treatments on shoulders as well as curbs and gutters. City Public Works Department, Streets Division is responsible for implementation. Work will begin in FY 09 or 4 miles of shoulder and continue each year. No new personnel are anticipated. Estimated cost of shoulder stabilization is \$150,000. This work will be funded through the City of Surprise. Arterial Street Assessment Fee established to pave half street pavements and recover cost once the adjacent property is developed. City of Surprise Community Development and Engineering Departments enforce streets standards for new roads including shoulders. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Tempe indicates that this measure requires paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (more than 2,000 vehicles or 50 heavy duty trucks per average weekday). There are currently approximately 2.4 miles of unpaved shoulders within the Tempe city limits. As development and redevelopment progresses, roadways, sidewalks, curbs and gutters will be required and built to city standards. The City's Public Works and Development Services departments are responsible for implementing this measure. Staff will develop a plan over the next twelve months to address the small amount of unpaved shoulders in the city. Plan development will include evaluating these areas for the following criteria: development plans for the near future, current level of stabilization and restriction from vehicle access, and feasibility for immediate paving or stabilizing.

In terms of assuring appropriate roadway infrastructure construction as it relates to development and redevelopment in Tempe, the staffing and funding

levels are in place and adequate. In addition, funding has been authorized to stabilize or pave public rights of way which have the potential of generating a level of dust not in compliance with current Maricopa County air quality standards. If necessary, staff will develop budget requests and/or CMAQ grant funding requests for 2008-09 or 2009-2010 to build sufficient infrastructure for elimination of the unpaved shoulders. Maricopa County and ADEQ have the authority to enforce measures identified in the nonattainment area plans. The City's development process, as implemented by the Development Services and Public Works departments, serves as the monitoring mechanism for this measure. Additionally, the Public Works Department and the Water Utilities Department's Environmental Services Division will work together to identify and abate potential noncompliant dust concerns associated with vehicle traffic. The City will submit progress reports on measure implementation to the MCESD, ADEQ, or MAG upon request.

- 2007 ■ City of Tolleson indicates that this measure would require paving or stabilizing shoulders on paved public roads that carry a high level of traffic (e.g., 2,000 vehicles or 50 heavy duty trucks per average weekday). The City of Tolleson Public Works, through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. The City of Tolleson will inventory all the streets assets to assist with complying with this measure. Maintenance will be scheduled on a five-year plan and linked to the Capital Improvement Plan for funding. The Public Works Department is responsible for paving or stabilizing unpaved shoulders. The City will budget for material cost and use existing personnel to complete the work. The Public Works Department will monitor the application and the effectiveness of the dust control agent, and make arrangements for reapplication at needed intervals.
- 2007 ■ Town of Youngtown indicates that Youngtown does not have unpaved shoulders other than the singular dirt road (115th Ave.) and alleys. The Public Works Department is responsible for implementation. This measure is implemented and ongoing. Personnel and funding allocated for implementation in the Public Works Department Budget. The measure is enforced by the Public Works Director by monitoring and the Code Compliance Officer through citations. The Town will periodically monitor road and alley surfaces.
- 2007 ■ Maricopa County indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic.

Authority for Implementation:

Arizona Revised Statutes (A.R.S.) § 11-251 (General Powers of Board Supervisors)

A.R.S. § 28-6705 (Public road and street maintenance)
A.R.S. § 28-6708 (Jurisdiction of streets; unincorporated town)
A.R.S. § 49-474.01(A)(4)

Implementation Schedule:

July 2007	Pave 5.1 miles of high traffic dirt road shoulders.
September 2007	Commence stabilization on highest priority shoulders, pave 8.5 miles by December 31, 2007, pave approximately an additional 22 miles of shoulders with an estimated average ADT of 7600 within the next 4 fiscal years.

Funding is allocated through the annual budget process. The 5.1 and 8.5 mile projects are funded in the current year budget. An estimated additional \$2 million dollars will be needed in FY2009 budget to complete this measure. MCDOT will oversee the implementation of this measure. MCDOT will submit annual progress reports to MCAQD as requested.

- 2007 ■ Arizona Department of Transportation indicates that this measure would require paving or stabilizing dirt shoulders on paved public roads that carry a high level of traffic (e.g., more than 2,000 vehicles or 50 heavy duty trucks per average weekday). This measure would be an enhancement of existing Measure 97-DC-4 Curbing, Paving, or Stabilizing Shoulders on Paved Roads (Including Painting Stripe on Outside of Travel Lane). That measure in turn was an enhancement of an ADOT commitment made in 1991 requiring curbing, paving, or stabilizing (chemically or with vegetation) shoulders of paved roads. The 1997 measure and the 1991 commitment did not specify an emphasis upon roads that carry a high level of traffic.

The Arizona Department of Transportation will be the agency responsible for implementation of this measure on the State Highway System. Legal authority for this action is provided under A.R.S. § 28-332 B.3., which states that the department shall design and construct transportation facilities in accordance with a priority plan and maintain and operate state highways, state owned airports and state public transportation systems.

The ADOT Maintenance and Facilities Best Management Practices Manual, March 2007, is one element of the Statewide Stormwater Management Plan (SSWMP). Its practices designed to prevent soil erosion serve to reduce airborne particulates in addition to limiting stormwater pollution. The Manual's ADOT Maintenance Performance Control System (PeCoS) Program 130-Shoulders also requires stabilizing exposed soils with native seeding, as appropriate.

The measure would be implemented by January 1st, 2008. Specific shoulder paving or stabilization projects have been included in the Five Year Construction Program as part of new construction or reconstruction. Certain quantified criteria were added to the Priority Programming process in 2004 including the criterion “conforms to air quality requirements” within the Environmental Goal and the objective “To address environmental needs, air quality requirements, and environmental justice.” The criterion would be replaced by a more specific statement of the emission reduction contribution of the measure. The measure would be in effect until the monitoring indicates that all State Highway System shoulders in Maricopa County are paved or otherwise stabilized.

The measure would be funded and staffed in the same manner as any past or current shoulder paving or stabilization project has been funded. The ranking of such projects might be affected by the establishment of an emission reduction criterion in the Priority Programming Process. ADOT, through the Air Quality Policy Branch, will review the PeCoS reporting on shoulder paving and stabilization projects within the nonattainment area. Performance reports will be extracted from PeCoS on future construction and reconstruction activities, including shoulder paving and stabilization activities adopted as a part of the stormwater SSWMP. ADOT will also explore opportunities to report results more effectively through the integration of PeCoS and GIS record systems and consider any new research that would recommend different soil stabilization materials or different stabilization reapplication schedules.

ADOT will monitor the use of the air quality criteria in the Priority Programming Process, the shoulder paving and stabilization projects accomplished annually (monitored through PeCoS), the year-to-year change in the status of shoulders on the State Highway System (available through the Highway Performance Monitoring System (HPMS) database and mapping). The information will be provided to Maricopa County Air Quality Division for the required annual report for the Environmental Protection Agency.

29. Create a fund for paving and stabilizing in high pollution areas.

- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department's Air Quality Enforcement Division has in the past incorporated supplemental environmental projects (SEP) into settlement agreements. The Air Quality Enforcement Division will enhance its existing SEP program to address the PM₁₀ nonattainment area. The Air Quality Department will initiate a stakeholder process to identify a list of potential pollution prevention and/or pollution reduction SEPs that can be funded by a company or individual to mitigate part of a civil penalty assessed by the Air Quality Enforcement Division. The Air Quality Department will post the list of potential SEPs on its website.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

September-December 2007	Initiate stakeholder process to identify a list of potential supplemental environmental projects.
January-March 2008	Post on the department's website an "idea bank" of supplemental environmental projects for consideration by companies or individuals who elect to mitigate civil penalties using SEPs.

No change in funding is anticipated for this measure. This is a voluntary program. The Air Quality Department currently tracks the number of supplemental environmental projects and will continue to track this information.

30. Strengthen and increase enforcement of Rule 310.01 for vacant lots

- 2007 ■ Maricopa County indicates that in January 2006, Maricopa County assigned a supervisor to oversee the vacant lot program. Additionally, Maricopa County will dedicate additional resources to enforcement of Rule 310.01 and increase the number of proactive vacant lot inspections.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.01(A)(11) authorizes the county to enter the vacant lots to stabilize the disturbed surface at the expense of the owner and issue notices of violation and fines plus the cost of stabilization.

Implementation Schedule:

Staffing:

January 2006	Assigned supervisor to oversee the vacant lot program
December 2007	Hire 3 inspectors, 3 supervisors, 1 administrative support staff, and 1 administrative support supervisor for the dust control vacant lot program
June 2008	Hire 4 inspectors and 2 administrative support staff for the dust control vacant lot program

Internal Policy/On-call services contract for stabilization:

March 31, 2008	Develop procedures for implementation of on-call stabilization services
March 31, 2008	On-call stabilization services contract in place

The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and the majority of Rule 316 (Nonmetallic Mineral Mining) sources. Currently, the Dust Compliance Division has a division manager and the following level of personnel for the dust control vacant lot (Rule 310.01) program:

Position	Dust Control Vacant Lot (Rule 310.01) Personnel
AQ Inspector Supervisor	-
AQ Inspector	10
Administrative Support	-
Total	10

The Maricopa County Air Quality Department will seek approval to hire 7 dust control vacant lot compliance inspectors, 3 compliance supervisors, 3 administrative support staff, and 1 administrative supervisor to support the increased number of vacant lot inspections.

The Air Quality Department's Air Quality Enforcement Division has 1 division manager, 5 enforcement officers, and 1 administrative support personnel. The

Department will seek to hire 5 additional enforcement officers. The Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs for additional dust control vacant lot personnel are estimated to be \$929,000. Annual costs for additional enforcement officers are estimated to be \$406,000.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measures(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Senate Bill 1552 authorizes the county to enter the lot to stabilize the disturbed surface, issue notices of violation, and collect monetary penalties that include the cost of stabilization. The Air Quality Department tracks the number of vacant lot inspections, number of enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate this program.

31. Restrict vehicular use and parking on vacant lots

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a city or town in Area A to no later than March 31, 2008, adopt or amend codes or ordinances as necessary to restrict vehicle parking and use on unpaved or unstabilized vacant lots (A.R.S. § 9-500.04 A.8.).

S.B.1552 requires a county in Area A, no later than March 31, 2008, to adopt or amend codes or ordinances as necessary to restrict vehicle parking and use on unpaved or unstabilized vacant lots (A.R.S. § 49-474.01 A.7.).

S.B. 1552 exempts any site that has a permit issued by a county control officer for the control of fugitive dust from dust generating operations (A.R.S. § 9-500.04 H. and § 49-474.01 H.).

- 2007 ■ City of Apache Junction indicates that the majority of problematic vacant lots in Apache Junction are vacant Bureau of Land Management and State owned lands. In 1997, the City of Apache Junction and the State Lands Department entered into an IGA for the fencing of State lands within the corporate limits of Apache Junction. Since 1997, 36 miles of state land has been fenced. As a commitment to this measure, Apache Junction will heighten its public education and outreach regarding the purpose of this fencing and commit to the building of an additional 3 miles of fencing. This measure will be implemented by the

City of Apache Junction Parks & Recreation Department. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation schedule is:

1. June 30, 2008- Complete the fencing of an additional 1 mile of state land property.
2. June 30, 2009- Complete the fencing of an additional 1 mile of state land property.
3. June 30, 2010- Complete the fencing of an additional 1 mile of state land property

The cost of constructing the additional 3 miles of fencing for the fulfillment of this measure will require an additional cost of \$9,500 over the next three years. Funding for heightened public education and outreach will fall under Apache Junction's commitment under measure "Public education and outreach." Needed resources to fulfill the first year's commitment will be accomplished with current department personnel under the adopted city budget for FY 07-08. Future resources needed to finish the commitment are still being examined. The enforcement function will be staffed and administered by the Apache Junction Parks & Recreation Park Rangers, Code Compliance and Apache Junction Police Department. Implementation of the measure will be documented by Public Works and Parks & Recreation Departments. Information on progress will be provided to Maricopa County as per its annual request. Information related to the initial inventory and assessment for fencing improvements/additions along with any plans will be forwarded to Maricopa County and/or MAG per any progress request.

- 2007 ■ City of Avondale indicates that this measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant lots. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Avondale Charter. The City of Avondale currently has restrictive ordinances prohibiting parking on vacant lots;

Code 23-61 parking prohibited for certain purposes.

No person shall park a vehicle upon any public street, right-of-way or other public property for the principal purpose of:

- (1) Displaying such vehicle for sale.
- (2) Washing, greasing or repairing such vehicle, except repairs necessitated by an emergency.
- (3) Displaying advertising.

- (4) Displaying commercial exhibits. (Code 1971, § 14-3-7; Ord. No. 905-03, § 5, 1-6-03)

Code 23-60 Authority to erect signs restricting parking.

The city manager, or authorized designee, may erect or cause to be erected, signs regulating, restricting, or prohibiting parking in any way the city manager deems necessary to preserve the health, safety, and general welfare of the public. When such signs are erected, no person shall stop or stand a vehicle in disobedience to such signs. (Code 1971, § 14-3-4; Ord. No. 905-03, § 4, 1-6-03)

The Avondale Police Department is responsible for enforcing the Code. This measure will continue to be enforced by ordinance. The enforcement funding will be staffed and administered under the Police Department and Code Enforcement. The City will prepare and submit progress reports when requested by outside agencies. A copy of the ordinance, if adopted, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Buckeye indicated that this measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant lots. This measure will be implemented by the Town of Buckeye Police Department. Legal authority for this action is provided under Arizona Revised Statutes Sections 9-240(B)(12), (21)(a) and 9-462.01. The implementation schedule is:

1. September 1, 2007- Coordination Meeting
2. November 1, 2007- Draft Ordinance Complete
3. November 20, 2007- Council Workshop
4. January 22, 2008- Public Hearing on Ordinance
5. March 4, 2008- Council Considers Ordinance for Adoption
6. July 1, 2008- Ordinance Implemented

An equivalent of one full-time employee will be required to work with the affected departments to draft the ordinance. The estimated cost to prepare the draft ordinance and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft ordinance and support leading to adoption will be performed by current department personnel consistent with the 2007/2008 fiscal year budget. This measure will be enforced by ordinance. The enforcement function is anticipated to be staffed and administered by the Police Department. The Police Department will provide information documenting progress in

implementing the measure as a part of the quarterly report to the Town Manager. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ Town of Carefree does not have any areas with high off-road vehicle activity. However, the Town has adopted an ordinance that makes it unlawful to operate an all terrain vehicle in a manner that causes excessive dust, and unlawful for any person to operate any motor vehicle on private property without property owners written permission. The Town of Carefree is responsible for enforcing the ordinance. The ordinance has been adopted. The Town of Carefree contracts with the Maricopa County Sheriff's Office for law enforcement services. The Town of Carefree budgets funds annually for the cost of the contract. The Town of Carefree and the Maricopa County Sheriff's Office both have complaint resolving procedures which are monitored by the Town Marshal and the Sheriff's District Commander. A copy of Section 6-2-5 (A) and (B) of the Carefree Code of Ordinances is attached to the resolution.
- 2007 ■ Town of Cave Creek has Code Enforcement Staff, during the course of their daily activities, identify vehicular use and parking on vacant lots. Data can be gathered over the next 12 months (September 1, 2007 to September 1, 2008) to document cases where vehicular use and parking on vacant lots may be taking place. If problem sites are identified a recommended course of action will be submitted to Town Council for approval and MAG will be notified of that plan following Council's approval. The Town of Cave Creek and its Code Enforcement Staff will be responsible for identifying problem sites for possible corrective action. One year (September 1, 2007 to September 1, 2008) with any possible corrective action to follow. The Town of Cave Creek contracts with the Maricopa County Sheriff's Office and Town Marshal's Office for code enforcement services. The Town of Cave Creek budgets funds annually for the costs of these contracts. The Town of Cave Creek and the Maricopa County Sheriff's Office both have complaint resolving procedures which are monitored by the Town Marshal's office and the Sheriff's District Commander.
- 2007 ■ City of Chandler indicates that this measure prohibits vehicle trespass on vacant land. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council, Section 1.03 Charter of the City of Chandler and Sections 12-3.1, 12-3.2, 30-3.2G, and 35-1802, Code of the City of Chandler. This measure is currently being enforced. Enforcement of the ordinance is currently part of the normal enforcement duties of the Police Department and is included in current budgets. The program will be enforced by the Police Department with support from the Neighborhood Resources Division through Code Section 1.8. Progress enforcement will be reported by

the number of citations issued for this violation. Such metrics will be reported by the Chief of Police to the City Manager's Office by the end of each fiscal year. The City Manager will forward the annual report to Maricopa County within 30 days of completion of the fiscal year. Maricopa County will be responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of applicable Code Sections is attached to the resolution. No Code changes are required to implement this measure.

- 2007 ■ City of El Mirage indicates that this measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant land and the enforcement of vehicle trespass ordinances and codes for vacant lots. Vehicle use on public or private property is regulated through our City Code Section 13-4-1 Excessive Dust. The code requires signs and barriers on vacant lots by property owners and makes it unlawful for operation of a vehicle on or across the vacant lot. The code will be reviewed and strengthen existing rules. The City will review penalties to this chapter and propose civil sanctions as part of the enforcement process. City of El Mirage Community Development and Code Enforcement Division. A.R.S. § 9-240, General Power of Council. Review current code and present updated code to City Council by March 2008. Funding for enforcement is included in the annual operation budget for the departments listed above and is not listed as a separate budget allocation. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans.
- 2007 ■ Town of Fountain Hills indicated that the Town will continue enforcing the existing zoning ordinance that requires hard surfaces (Asphalt or concrete) for parking, driving or storage of any vacant or occupied lot. This measure will continue to be implemented by the Planning and Zoning Department and Maricopa County Sheriff's Office. Code enforcement staff will identify vehicular use and parking on vacant lots. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place. If problem sites are identified, existing Town Codes provisions will be enforced. Code Enforcement personnel will perform monitoring activity during the normal course of their daily work activities. Code Enforcement personnel will continue to meet with violators, seek compliance and prosecute if necessary. The Town will submit progress reports to State and/or County agencies upon request.
- 2007 ■ Town of Gilbert indicates that the Town of Gilbert code restricts vehicle use and parking on vacant lands by making it illegal to access property that is not paved or dust-proofed with a motor vehicle, without the written permission of the property owner. The Town adheres to Maricopa County Rule 310.01 by fencing off or otherwise controlling access to Town owned vacant lands, and stabilizing the surface with an approved stabilization method. These restrictions are based upon the following Town Codes and Policies.

Town of Gilbert Code 62-5, Operating or driving; owner's permission required. It is unlawful to operate or drive any motor vehicle, motorcycle, minibike, trail bike, dune buggy, motor scooter or other form of transportation propelled by an internal combustion engine on or across the property of another if that property is not paved or dust-proofed in accordance with the standards adopted by the department of public works and without the written permission of the property owner or the person entitled to immediate possession thereof or the authorized agent of either in the operator's possession. Parking; owner's permission required. It shall be unlawful to park or leave any motor vehicle, motorcycle, minibike, trail bike, dune buggy, motor scooter, motor home, mobile home, travel trailer, camper, boat, trailer or other form of recreational vehicle or form of transportation upon the private property of another, without displaying in public view the written permission of the property owner or the person entitled to immediate possession thereof or the authorized agent of either.

Town Property: The Town of Gilbert owns properties acquired for future parks or other facilities, safety condemnations, and other such uses. Periodic inspections are conducted by the Environmental Programs Coordinator, Community Services, or the department who maintains the property, to ensure the properties are stabilized in compliance with Maricopa County Rule 310.01. Stabilization methods include heavy watering, rock products, chemical stabilizers, and other approved stabilization methods. In addition, access is controlled with signs, berms, fencing, bollards, boulders, or other methods as necessary.

The Implementation Agency and Authority for Implementation are as follows:

- Town of Gilbert, Police Department
- Town of Gilbert, Community Services Department
- Town of Gilbert, Risk Management Department
- Town of Gilbert, Public Works Department
- A.R.S., Sections 9-240: General Powers of Council
- Code of Gilbert Arizona, Section 1-37: Corporate Powers
- Code of Gilbert Arizona, Section 30-10: Environment
- Code of Gilbert Arizona, Section 62-5: Traffic and Vehicles

Ongoing implementation. Funding for all Department tasks are included in the annual operating budget and are not listed as a separate allocation. The Police Department enforces parking violations by issuing citations on an observation and complaint basis. Other departments listed above work in conjunction with the Police Department. Code compliance works to observe violations of code 62-5 and notifies vehicle owners that they are in violation of Town code and need to remove their vehicle. In a location of frequent violations, code enforcement contacts the property owner. Any vehicles found illegally parking

on Town of Gilbert property are towed at the owner's expense. The Town will submit progress reports to State and/or County agencies upon request.

2007 ■ City of Glendale indicates that this measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant land. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Glendale Charter. The City currently has several City Code provisions that address vehicular trespassing on vacant land.

1. Code 24-173. Operation of vehicles on vacant lots. It shall be unlawful to operate a vehicle across any portion of a vacant lot other than by the owner, thereof, unless the lot is dust free, as defined in this Code.
2. Code 25-22. Vehicles. a) No person shall park or permit to be parked any vehicle for the purpose for sale upon any property or vacant property except where the sale of a vehicle is customary and incidental to the principal use of the property and in accordance with the Glendale zoning ordinance, article 5. Zoning district regulations.

In addition, the City will consider strengthening its existing Code. By March 31, 2008, the City will amend or adopt a city ordinance to restrict vehicle parking and use on unpaved or unstabilized vacant lots. The City will allow a phase-in period prior to enforcing the new requirement. The phase-in period will be used to educate and inform businesses and the public of the new requirement. The Code Compliance Department is responsible for enforcing the City Code. Funding for the implementation of this measure is determined in the city's annual budgeting process. This measure is expected to be enforced by ordinance. The Code Compliance Department will document progress made in implementing this measure. The City will prepare and submit progress reports, when requested by outside agencies. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

2007 ■ City of Goodyear indicates that the City will inventory all unpaved vacant lots within the city's boundaries. Based on the inventory the City will review their existing ordinances to include requirements for stabilizing any unpaved parking lots. This measure will be implemented by the City of Goodyear Community Initiatives Department, (Code Compliance Division), along with the Public Works Department and Engineering and Planning and Zoning Departments. The City of Goodyear currently has an ordinance in place that prohibits the operation of motorized vehicles on private land without the written permission of the owner. Ordinance 2006-981. The City of Goodyear Zoning Ordinances, sections 3-2-6 and 3-2-12 requires dust control to all unpaved parking and maneuvering areas. Chapter 6 of the Engineering Design Standards and Policies Manual outlines dust control measures during construction activities. In FY 07-08 the City will

review codes, ordinances and policies to identify options for enhanced dust control measures for vacant lots. FY 07-08 the City will contact private property owners about PM-10 measures for unpaved lots. FY 08-09 the City will implement an Educational and Outreach Program for property owners and developers on enforcement of PM-10 measures. City will inventory all vacant lots within the City of Goodyear by June 2008.

The increased enforcement measures will require additional staff members to be acquired in FY 08-09 to include one additional Code Compliance Officer and one Environmental Compliance Officer. Additional staffing is estimated to cost the City \$175,000. The Community Initiatives Department will enforce the existing Ordinance, (2006-981) with current staffing. The Public Works Department along with the Engineering and Planning and Zoning Departments will track and maintain a list of all unpaved parking lots by property owners.

- 2007 ■ Town of Guadalupe indicates that the Town will draft and adopt an ordinance to include requirements pertaining to restricting parking and driving on unpaved surfaces. The Town of Guadalupe Building Inspector, through the authority granted to him by A.R.S. Section 9-240 is responsible for implementation. The Building Inspector will identify vehicular use and parking on vacant lots. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place. If problems sites are identified, a recommended course of action/implementation plan will be submitted to the Town Council for approval no later than November 30, 2008. MAG will be notified of any plan implementation. The building inspector will perform monitoring activity during the normal course of daily work activities. The building inspector will meet with violators and mediate a resolution. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place.
- 2007 ■ City of Litchfield Park indicates that the City will continue to enforce City and Zoning Code requirements pertaining to the restriction of parking and driving on unpaved surfaces. Code Enforcement will address any noncompliance through their normal procedures as granted to them by A.R.S. § 9-240. Code Enforcement staff will identify vehicular use and parking on vacant lots through their normal daily activity. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place. If problem sites are identified, a recommended course of action/implementation plan will be submitted to the City Council for approval no later than September 30, 2008. MAG will be notified of any plans(s) implemented. Code Enforcement personnel will perform monitoring activity during the normal course of their daily work activities. Code Enforcement personnel will be available to meet with violators to assist with any issues. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place.

2007 ■ City of Mesa indicates that the City's regulation of vehicle use and parking on vacant lands is based upon the City Codes and Policies discussed below.

- Particulate Pollution Ordinance: City of Mesa Code 8-2-4 (D) requires that no person shall cause, suffer, or allow a vacant parcel or an urban or suburban area to be driven over or used by motor vehicles or off-road vehicles without first implementing control measures to effectively prevent or minimize fugitive dust.
- Particulate Pollution Ordinance: City of Mesa Code 8-2-4 (F) requires that no person shall cause or allow any vacant parcel to remain unoccupied, unused, vacant, or undeveloped for more than fifteen (15) days without first implementing control measures to effectively prevent or minimize fugitive dust.
- Public Nuisances, Property Maintenance and Neighborhood Preservation: City of Mesa Code 8-6-3 (J) requires that it shall be unlawful for any person to display any vehicle or boat for sale, rent, or lease on vacant, undeveloped, or unsurfaced property shall allow or permit such displays.
- City Property: The City of Mesa owns properties that have been acquired for future uses. Periodic inspections are conducted to ensure the properties are stabilized in compliance with Maricopa County Rule 310.01. Stabilization methods include heavy watering, rock products, and chemical stabilizers. In addition, access is controlled with signs, berms, fencing, or other methods as necessary.

Environmental Programs has one full time staff person who will focus inspection efforts on dust generating activities (unpaved parking lots, construction and vacant parcels). Additionally, there are two full time Environmental Specialists and a Division Administrator who are authorized to support the particulate pollution program including conducting inspections and initiating enforcement actions. The Environmental Programs Division also inspects all City owned vacant lots on a monthly basis. The Code Compliance Division is responsible for enforcement of Public Nuisances, Property Maintenance and Neighborhood Preservation ordinances. Arizona Revised Statute, Section 9-240, General Powers of Councils. Mesa City Charter, Article I: Powers of the City. Mesa City Code, Section 8-2-4 (D), Section 8-2-4 (F) and Section 8-6-3 (J).

Implementation will be ongoing. Funding is allocated through the annual budget process to fund staff positions in Environmental Programs and Code Compliance. Over the past several years, the Environmental Programs Division

has responded to an average of 80 dust complaints and has conducted an average of 162 dust inspections annually. The Environmental Programs Division inspects City owned vacant lots monthly. Over the past three years, the Code Compliance Division has issued to an average 1989 notices of violation for parking violations on unimproved surfaces. Arizona Revised Statute, Section 49-406, grants Maricopa County and the ADEQ the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Paradise Valley indicates that the Town commits to drafting and considering an ordinance requiring owners of vacant lots in excess of five acres to ditch and berm the perimeter of the property to prevent vehicular access. This would apply to approximately 30 properties. The proposed ordinance would also require owners of vacant lots less than five acres to erect a fence or other barrier consistent with zoning regulations if more than one complaint is received about unauthorized vehicular access on the property. This measure will be implemented by the Town of Paradise Valley Planning and Building Department. Legal authority for this action is provided under A.R.S. § 9-240. The schedule for completing this work is as follows:

1. September 28, 2007- Draft ordinance completed
2. October 25, 2007- Town Council work session to receive briefing from staff, discuss, and provide feedback
3. November 15, 2007- Town Council considers ordinance for adoption
4. January 1, 2008- Ordinance implementation and enforcement

Preparation of the draft ordinance and staff support leading to adoption will be accomplished by current department personnel under the adopted budget for FY 2008. Administration and implementation of the measure will be conducted by current departmental personnel and included as part of the departmental personnel budget for future fiscal years. This measure will be enforced by ordinance. The enforcement function will be staffed and administered under the Planning & Building Department. The Paradise Valley Police Department will enforce the measure during nonbusiness hours. The Town will submit progress reports to State and/or County agencies upon request. A copy of the ordinance, if adopted, will be forwarded to the Maricopa Association of Governments.

- 2007 ■ City of Peoria indicates that the Community Development Department (Code Enforcement Division) will inventory all vacant lots within the City of Peoria. The inventory will be divided between those that do not have a curb and gutter edge and those that have curb and gutter edge. The Community Development

Department (Code Enforcement Division) and the Engineering Department will be responsible for implementation of the measure as required by City Code 23-76. By January 2008, the Community Development Department (Code Enforcement Division), will provide an inventory of the vacant lots, showing those that are edged with curb and gutter, and those that are not edged with curb and gutter. The Engineering Department will confirm and document ownership, and notify property owners by March 2008 of the requirement to prohibit vehicular use/parking on the vacant lot, with a request to provide an implementation schedule for providing barricades, signage or other barrier that will prohibit the use of the lot for parking. The Engineering Department will review the implementation schedule, and notify the owner that they need to agree to implement the schedule as outlined. If the City of Peoria does not receive a response from the property owner, the owner will be cited by the Community Development Department (Code Enforcement Division) of the violation as a misdemeanor.

The Community Development Department (Code Enforcement Division) will provide five staff members to schedule and assist the Engineering Department in the implementation/enforcement of this issue. This will be an ongoing process that could require funding in the future. It may require a review by both the Engineering Department and the Community Development Department (Code Enforcement Division) to determine if full time positions are needed. The City of Peoria City Code 23-77 requires that vacant lots cannot be used for parking or trespassing. The Engineering Department will document, and provide a copy to Maricopa County, of all vacant lots, property owners, date notified, implementation schedule, completion schedule and/or the court date.

2007 ■ City of Phoenix indicates that for Public and Private Property: vehicle use on public or private property is regulated through several City Codes.

- Traffic on Vacant Lots-Traffic Code: Phoenix City Code, Section 36-62 requires that no person shall operate a vehicle on or across any portion of a vacant lot other than on an established dustproof driveway.
- Vehicle Parking-Traffic Code: Phoenix City Code, Section 36-145 prohibits parking of any motor vehicle on any lot that is not dust-free/dustproof.
- Property Maintenance-Neighborhood Preservation Ordinance: Phoenix City Code, Section 39-7(G) requires that motor vehicles or trailers shall not be parked, maneuvered, or stored on any lot or area which is not dustproof. Standards for designated parking areas are discussed in *Pave or Stabilize Existing Unpaved Parking Lots*: MAG Reference:#31.

- City Parks: Phoenix City Code, Section 24-51 prohibits parking or driving any vehicle in a City park except within the designated parking areas, or other authorized areas. This includes all City parks, mountain preserves, Rio Salado Wetlands, etc.

City Property: The City of Phoenix owns properties acquired for future parks or other facilities, safety condemnations, buffer zones for the wastewater treatment facilities, etc. Periodic inspections are conducted by the Office of Environmental Programs, or the department who owns the property, to ensure the properties are stabilized in compliance with Maricopa County Rule 310.01. Stabilization methods include heavy watering, rock products, chemical stabilizers, etc. In addition, access is controlled with signs, berms, fencing, bollards, boulders, or other methods as necessary.

Implementing Agency or City Department:

City of Phoenix, Police Department
 City of Phoenix, Neighborhood Services Department
 City of Phoenix, Parks and Recreation Department
 City of Phoenix, Office of Environmental Programs
 City of Phoenix, Aviation Department
 City of Phoenix, Water Services Department

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council
 Phoenix City Charter, Chapter 2: General Powers, Rights, and Liabilities

References to Codes & Ordinances:

Phoenix City Code, Section 24-51: Operation & Parking of Vehicles in Parks
 Phoenix City Code, Section 36-62: Operation of Vehicles on Vacant Lots
 Phoenix City Code, Section 36-145: Parking on Non-Dust-Free-Areas
 Phoenix City Code: (Neighborhood Preservation Ordinance) Section 39-7 (G): Property Maintenance-Parking, Maneuvering, and Storage

Ongoing implementation. Funding for the Neighborhood Services Department, Development Services Department and Police Department tasks is included in the annual operating budget and is not listed as a separate

allocation. The Neighborhood Services Department (NSD) enforces the Neighborhood Preservation Ordinance for all properties on a complaint basis. Over the past few years NSD issued an average of more than 7,500 Notices of Violation each year for dust-proofing requirements on parking surfaces of residential, commercial or industrial properties and undeveloped property. In addition to complaints, the City Council approved NSD Code Enforcement Policy that allows when an initial inspection is conducted based upon a complaint for another violation, the inspector may expand upon the initial complaint on the same property to determine whether any of eight common blight violations exist, including nondustproof parking. The Police Department enforces traffic and trespass codes. The Park and Recreation Department enforces the parking codes for City parks, mountain preserves and other open spaces. The Office of Environmental Programs, Water Services Department, Aviation, and Neighborhood Services manage dust control protection on City property. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Non-attainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Queen Creek indicates that the Town will continue to enforce Zoning Ordinance requirements pertaining to the restriction of parking and driving on unpaved surfaces. The Town of Queen Creek Community Development Department through the authority granted to them by A.R.S. Section § 9-240 is responsible for implementation. Code Enforcement staff will identify vehicular use and parking on vacant lots. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place. If problem sites are identified, a recommended course of action/implementation plan will be submitted to the Town Council for approval no later than September 30, 2008. MAG will be notified of any plans(s) implementation. Code Enforcement personnel will perform monitoring activity during the normal course of their daily work activities. Code Enforcement personnel will continue to meet with violators as this has proven to be effective. Data will be gathered over the next 12 months to document cases where vehicular use and parking on vacant lots is taking place.

2007 ■ City of Scottsdale indicates that this measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant land.

- Public and Private Property: City ordinances prohibit as unlawful, vehicle use on both public and private property.
- Unlawful vehicle use: Scottsdale City Code, Section 19-14 prohibits operating, driving or leaving a vehicle on any private or public property without the owner's written permission.

- Temporary/Security Fencing for vacant land: On March 6, 2007 the City Council approved 9-TA-2007, which established procedures and standards regarding the use of temporary/security fencing on vacant lots and other sites.
- For Sale vehicle parking: Scottsdale City Code, Section 17-111.1 says that "No person shall park or permit to be parked any motor vehicle for the purpose of sale upon any lot or area within the city which is unpaved."

Responsible Agency and Authority for Implementation:

City of Scottsdale, Police Department
 City of Scottsdale, Code Enforcement Division
 City of Scottsdale, Environmental and Preservation Office

Authority for Implementation:

A.R.S., Section 9-240: General Powers of Council
 Scottsdale City Charter, Article I, Sec. 3: Powers of City
 Scottsdale City Code, Sections 17,19 various
 Scottsdale Zoning Ordinance, Section 7-700

Ongoing implementation. Funding enforcement is included in the annual operation budget for the departments listed above and is not listed as a separate budget allocation. The Police Department enforces traffic and unlawful vehicle use codes. Code Enforcement Division inspectors enforce vehicle for sale on unpaved areas prohibitions. For Fiscal Year 2007/2008 there are 11 Code Enforcement inspectors, 3 specialists and a manager. A portion of each inspector's duties is dust control and vacant lot enforcement. The Environmental Preservation Office receives citizen complaints regarding dust control on vacant lots via the Environmental Hotline and electronic reports on the city's web site. Complaints are forwarded to the appropriate inspectors for enforcement. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. Code Enforcement inspectors and the Environmental Office will record and track the number of dust control complaints, including those related to vacant lots. The city will submit reports to state and/or county agencies upon request.

- 2007 ■ City of Surprise indicates that the City, no later than March 31, 2008, will adopt or amend codes or ordinances as necessary to restrict vehicle parking and use on unpaved or unstabilized vacant lots. City Community Development Department, Code Enforcement Division, City Police Department are responsible for implementation. Funding for these tasks is included in the

annual operating budget for each responsible department. Once codes/ordinances are written and implemented, the following city departments will be responsible for enforcement: City Police Department, City Community Development Department, Code Enforcement Division. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Tempe indicates that this measure strengthens existing rules and ordinances that restrict parking and vehicular movement on vacant lots. The City will review its parking and zoning ordinances and will amend and clarify existing ordinances as necessary to prevent vehicle use on or across any portion of a vacant lot other than on an established dustproof driveway. If the review indicates the need for a separate ordinance related to operating vehicles and parking on nondust free lots, staff will follow City procedure for developing the ordinance and obtaining City Council approval.

City of Tempe Development Services and Public Works Departments are responsible for implementation. The ordinance and city code review will be completed in twelve months of City Council approval and adoption of the plan to implement these measures. The staffing level for implementing the measure as described above is adequate. For the City's commitment to restricting vehicular access to unpaved lots within the Tempe city limits, the Development Services Department and Public Works Department will do the following:

- Prepare an inventory of city owned vacant lots and accessible property.
- Evaluate each lot in terms of access restriction and paving/stabilization strategies.
- Prepare budget requests as necessary for consideration during the budget processes for fiscal years 2008-09 and 2009-10.

Enforcement of vehicle parking codes is the responsibility of the City's Development Services Department. Code violations and compliance information are tracked by the Development Services Department. Information and data will be provided on measure implementation to the MCESD, ADEQ, or MAG upon request.

Parking on vacant lots is addressed in the Zoning and Development Code as follows:

Chapter 6, Section 4-602, B. Parking Standards Applicable in All Zoning Districts

2. *Parking* is allowed only on paved *parking* surfaces. Pavement may be concrete, asphalt, or a porous material approved by the Development Services Manager, or designee. Where decomposed granite or similar porous pavement is used, it shall conform to ADA guidelines and the *parking* lot entrance(s) and exits(s) shall have tire cleaning strips to remove loose particles from the tires of vehicles.

2007 ■ City of Tolleson indicates that the City will continue to enforce the ordinance requirement pertaining to the restriction of parking and driving on unpaved surfaces. The City of Tolleson Public Works Department and Code Enforcement, through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. The City of Tolleson currently has restrictive ordinances prohibiting parking on vacant lots. Public Works and Code Enforcement staff will identify vehicular use and parking on vacant lots. If problem sites are identified, a recommended course of action/implementation plan will be submitted to the City Council for approval no later than September 30, 2008. MAG will be notified of any plan(s) implementation. The Public Works Department and Code Enforcement Staff will perform monitoring activity during the normal course of their daily work activities. Code Enforcement staff will continue to meet with the violators. The City will submit progress reports, when requested by other agencies.

2007 ■ Town of Youngtown indicates that the Town will tighten enforcement on residential, commercial and disturbed vacant lots. The Code Compliance Officer is responsible for implementation. Youngtown Code Chapter 8.28-Dust Control, Youngtown General Plan Chapter 7 Environmental Element. The measure is implemented and ongoing. Personnel and funding allocated for implementation in the Code Compliance Budget. This measure is enforced through the Code Compliance Officer citations. There will be periodic monitoring.

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will adopt an ordinance(s) to restrict off-road recreational motor vehicle use on unpaved surfaces and vehicular use and parking on vacant lots. In addition, the Department will coordinate with the Maricopa County Sheriff's Office to conduct enforcement initiatives which will involve enforcement of ordinances and rules to prevent and discourage off-road vehicle use and trespass on vacant lots. The initiatives will be prioritized based on complaints and in areas with high off-road vehicle and trespass activity.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 11-251 (43) to adopt and enforce necessary ordinances to regulate off-road recreational motor vehicles

that are operated within the county on public lands without lawful authority or on private lands without the consent of the lawful owner or that generate air pollution.

Implementation Schedule:

Enforcement Initiative:

July - November 2007 Develop procedures and coordinate efforts with other jurisdictions

January - March 2008 Identify heavy use areas and research parcel ownership. Contact property owners for installation of control measures, 'no trespass' signs, and obtain authority to cite trespassers without owner presence

April 2008 Begin enforcement initiatives and outreach

Ordinances(s):

September 2007 Draft ordinance and conduct stakeholder workshops

March 2008 Board consideration of ordinance

No change in level of personnel or funding is anticipated for the ordinance development activities. The Maricopa County Air Quality Department Dust Compliance Division will coordinate with the Maricopa County Sheriff's Office on the enforcement initiatives. Maricopa County Measure #4 describes existing dust control vacant personnel and new personnel the Department will seek to hire for the dust control vacant lot program. The Air Quality Department's revenue for the air quality program is estimated to be \$14.4 million. Start-up costs for database development are estimated to be \$133,500. Annual database maintenance costs are estimated to be \$73,300. The enforcement process will be described in the ordinance. The Department anticipates that a citation and civil penalty will be issued to off-road recreational vehicle operators and individuals in violation of the ordinance. The Air Quality Department will track the number of enforcement initiatives and the number of citations issued.

32. Enhanced enforcement of trespass ordinances and codes

- 2007 ■ City of Apache Junction indicates that this measure will include the review and analysis of existing ordinances and actions already in place to prevent or discourage vacant land trespass within the incorporated limits of the City of Apache Junction. Changes may include amending and/or repealing existing ordinances or the adoption of a new ordinance for more efficient enforcement,

prevention and discouragement of trespassers of vacant private or public properties. This measure will be implemented by the City of Apache Junction. Legal authority for this action is provided under A.R.S. Section 9-240(B). The implementation schedule is:

1. February 29, 2008- Complete review of existing ordinance and activities.
2. March 28, 2008- Prepare the draft/repeal/amendment of ordinance (s).
3. April 2008- City Council consideration of ordinance (s) for adoption/revisions.
4. May 2008- Public Hearing on ordinance (s) and possible City Council adoption.
5. June 2008- Implementation of new/revised ordinance (s).

The estimated cost for the review of existing ordinances, actions, and preparation and possible passage of new/revised ordinance (s) leading to the fulfillment of this measure will require a staff time equivalent to 0.15 FTE, at a cost of \$12,000. This will be accomplished by current department personnel under adopted city budget for FY 07-08. The ongoing cost after possible ordinance implementation is estimated at \$3,000 and will be accomplished by current department personnel and future operating budgets. This measure will be enforced by ordinance. The enforcement function will be staffed and administered by Apache Junction Code Compliance and the Apache Junction Police Department. Implementation of the measure will be documented by the Public Works Department. Information on progress will be provided to Maricopa County as per its annual request. A copy of the ordinance (s), if passed, will be forwarded to Maricopa County and/or MAG per any progress request.

- 2007 ■ City of Avondale indicates that this measure would increase the enforcement of vehicular trespass ordinances and codes for vacant lots. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Avondale Charter. The Avondale Police Department currently works collaboratively with Maricopa County Sheriff's Office to enforce state Statutory Trespassing laws. The Police Department is responsible for enforcing trespassing on private property. Funding will be made available during the annual budgeting process. This measure will be enforced by ordinance and Arizona trespassing laws. The Avondale Police Department will document progress made in implementing this measure. The City will prepare and submit progress reports, when requested by outside agencies.

2007 ■ Town of Buckeye indicates that this measure would increase the enforcement of vehicle trespass ordinances and codes for vacant lots. This measure will be implemented by the Town of Buckeye Police Department. Legal authority for this action is provided under Arizona Revised Statutes Sections 9-240(B)(12) and (21)(a). The implementation schedule is :

1. September 1, 2007- Coordination Meeting
2. November 1, 2007- Draft Ordinance Complete
3. November 20, 2007- Council Workshop
4. January 22, 2008- Public Hearing on Ordinance
5. March 4, 2008- Council Considers Ordinance for Adoption
6. July 1, 2008- Ordinance Implemented

An equivalent of one full-time employee will be required to work with the affected departments to draft the ordinance. The estimated cost to prepare the draft ordinance and provide required staff support leading to adoption is not expected to exceed \$15,000.00. Coordination with the affected departments, developing the draft ordinance and support leading to adoption will be performed by current department personnel consistent with the 2007/2008 fiscal year budget. This measure will be enforced by ordinance. The enforcement function is anticipated to be staffed and administered by the Police Department. The Police Department will provide information documenting progress in implementing the measure as a part of the quarterly report to the Town Manager. On an annual basis, Maricopa County will be requesting information on the progress made with implementation. Maricopa County is the entity responsible for reporting reasonable further progress to the U.S. Environmental Protection Agency. A copy of the ordinance, if passed, will be forwarded to the Maricopa Association of Governments.

2007 ■ Town of Carefree does not have any areas with high off-road vehicle activity. However, the Town has adopted an ordinance that makes it unlawful to operate an all terrain vehicle in a manner that causes excessive dust, and unlawful for any person to operate any motor vehicle on private property without property owners written permission. The Town of Carefree is responsible for enforcing the ordinance. The ordinance has been adopted. The Town of Carefree contracts with the Maricopa County Sheriff's Office for law enforcement services. The Town of Carefree budgets funds annually for the cost of the contract. The Town of Carefree and the Maricopa County Sheriff's Office both have complaint resolving procedures which are monitored by the Town Marshal and the Sheriff's

District Commander. A copy of Section 6-2-5 (A) and (B) of the Carefree Code of Ordinances is attached to the resolution.

- 2007 ■ Town of Cave Creek has Code Enforcement Staff, during the course of their daily activities, that will monitor unauthorized vehicular activity (trespassing). Data can be gathered over the next 12 months (September 1, 2007 to September 1, 2008) to determine whether a problem exists. Trespassing violations will be referred to the Maricopa County Sheriff's Office, as appropriate. One year (September 1, 2007-September 1, 2008) with any possible corrective action to follow. The Town of Cave Creek contracts with the Maricopa County Sheriff's Office and Town Marshal's Office for law enforcement services. The Town of Cave Creek budgets funds annually for the costs of these contracts. The Town of Cave Creek and the Maricopa County Sheriff's Office both have complaint resolving procedures which are monitored by the Town Marshal's Office and the Sheriff's District Commander.
- 2007 ■ City of Chandler indicates that this measure would provide enforcement of vehicular trespass ordinances and codes for vacant lots. Legal authority for this action is provided under A.R.S. Section 9-240, General Powers of Common Council, Section 1.03 Charter of the City of Chandler and Sections 12-3.1, 12-3.2, and 30-3.2 G. The City of Chandler through the Police Department and Neighborhood Services Division is currently enforcing this measure as part of their normal duties. Enforcement of the ordinance is currently part of the normal enforcement duties of the Police Department and is included in current budgets. The program will be enforced by the Police Department with support from the Neighborhood Services Division through Code Section 1.8. Progress of enforcement will be reported by the number of citations issued for this violation. Such metrics will be reported by the Chief of Police to the City Manager's Office by the end of each fiscal year. The City Manager will forward the annual report to Maricopa County within 30 days of completion of the fiscal year. Maricopa County will be responsible to report reasonable further progress to the U.S. Environmental Protection Agency. A copy of applicable Code Sections is attached to the resolution. No Code changes are required to implement this measure.
- 2007 ■ City of El Mirage indicates that this measure would strengthen existing rules and ordinances that prohibit vehicle trespass on vacant land and the enforcement of vehicle trespass ordinances and codes for vacant lots. Vehicle use on public or private property is regulated through our City Code Section 13-4-1 Excessive Dust. The code requires signs and barriers on vacant lots by property owners and makes it unlawful for operation of a vehicle on or across the vacant lot. The code will be reviewed and strengthen existing rules. The City will review penalties to this chapter and propose civil sanctions as part of the enforcement process. City of El Mirage Community Development and Code Enforcement Division. A.R.S., Section 9-240 General Power of Council is responsible for

implementation. Review current code and present updated code to City Council by March 2008. Funding for enforcement is included in the annual operating budget for the departments listed above and is not listed as a separate budget allocation. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans.

2007 ■ Town of Fountain Hills indicates that the Town will monitor the motor vehicular trespass activity from July 1, 2007 to June 30, 2008, to determine whether a problem exists. Planning & Zoning Department is responsible for implementing this task. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council. Data will be gathered from July 1, 2007 to June 30, 2008. If a problem exists, staff will develop a plan for review and approval by Town Council. Code Enforcement personnel will monitor unauthorized vehicular activity during the course of their normal work duties. The Town contracts with the Maricopa County Sheriff's Office for enforcement. Any Town trespass violation will be referred to the Maricopa County Sheriff's Office. The Town will submit progress reports to the State and/or County agencies upon request.

2007 ■ City of Glendale indicates that this measure would increase the enforcement of vehicular trespass and codes for vacant lots. Legal authority for this action is provided under A.R.S. § 9-240, General Powers of Common Council and the Glendale Charter. The City currently has several City Code provisions that address vehicular trespassing on vacant land. The following provisions are in addition to the provisions applicable to vehicular use on vacant lots.

1. Code 24-52. Parking for certain purposes prohibited. No person shall park a vehicle upon any right-of-way for the principle purpose of: 1) displaying such a vehicle for sale; 2) washing greasing or repairing such a vehicle except repairs necessitated by an emergency; 3) Displaying advertising; and 4) Displaying commercial exhibits.
2. Code 24-57. Parking at roadside. No person shall park any vehicle at any time in that area between the curb and the sidewalk. On those roadways without curbs, no person shall park a vehicle so as to force, or potentially force, a pedestrian to walk in the traveled portion of the roadway or private property.

In order for the City to enforce trespassing complaints property owners are required to install proper signage on their property and to submit a no trespass form. The Police Department will train and ensure that its officers are aware of their duty and responsibility regarding trespassing. The Police Department is

responsible for enforcing trespassing on private property. Funding for the implementation of this measure is determined in the city's annual budgeting process. This measure is expected to be enforced by ordinance and Arizona trespassing laws. The Police Department will document progress made in implementing this measure. The City will prepare and submit progress reports, when requested by outside agencies. A copy of the ordinances will be forwarded to the Maricopa Association of Governments.

2007 ■ City of Goodyear indicates that through the Community Initiatives Department, (Code Compliance), Engineering Department, Planning and Zoning Department, Police Department and Public Works Department the City will monitor all vacant lots on a monthly basis to ensure that trespass and parking is prohibited. This measure will be implemented by the City of Goodyear Community Initiatives Department, (Code Compliance Division); and along with the Police Department will enforce this measure as required by Ordinance 2006-981. The City of Goodyear currently has an ordinance in place that prohibits the operation of motorized vehicles on private land without the written permission of the owner. Ordinance 2006-981. Enhanced enforcement will be effective in FY 08-09 budget year by acquiring additional staff members in Code Enforcement and Environmental Compliance. The increased enforcement measures will require additional staff members to be acquired in FY 08-09 to include one additional Code Compliance Officer and one Environmental Compliance Officer. Additional staffing is estimated to cost the City \$175,000. The Community Initiatives Department will enforce the existing Ordinance, (2006-981) with current staffing with the assistance from other City Departments reporting violations to Code Enforcement. The City will submit progress reports to State and/or County agencies upon request.

2007 ■ Town of Guadalupe indicates that the Town will conduct a study to determine the number of vacant lots in excess of five acres. If any lots meeting this criteria are found and determined to pose a concern for PM-10 emissions, the Town will consider adopting a provision to require owners of vacant lots to trench and berm the perimeter of the property to prevent vehicular access. Enforcement of the policy will be by the Building Inspector and law enforcement officers as provided under A.R.S. Section 9-240. The study will be completed by November 30, 2007 with a policy for enforcement to be established by June 30, 2008. The study will be conducted by current department personnel under the FY 2008 budget. Administration and implementation of the measure will be conducted by current department personnel and included as part of the departmental personnel budget for future fiscal years. This measure will be enforced by citing the offending party with the matter being referred to the Guadalupe Municipal Court. The Building Inspector will report violations of private trespass.

2007 ■ City of Litchfield Park indicates that the City will monitor vehicle trespass activity from August 1, 2007 to June 30, 2008. To determine whether a problem exists.

Code Enforcement with the assistance of the Public Safety authority will address any noncompliance through their normal procedures as granted to them by A.R.S. § 9-240. Data will be gathered from August 1, 2007 through June 30, 2008. If a problem exists, staff will develop a plan for review and approval by the City Council. Code Enforcement personnel will monitor activity during the normal course of their normal work activities. Through the combined efforts of Public Safety authority and Code Enforcement, the measure will be monitored.

- 2007 ■ Town of Paradise Valley indicates that in coordination with two other measures the Town of Paradise Valley commits to drafting and considering an ordinance requiring owners of vacant lots in excess of five acres to ditch and berm the perimeter of the property to prevent vehicular access. This would apply to approximately 30 properties. The proposed ordinance would also require owners of vacant lots less than five acres to erect a fence or other barrier consistent with zoning regulations if more than one complaint is received about unauthorized vehicular access on the property. The Town further commits to enhanced patrolling of vacant lots by the Police Department to enforce existing trespass ordinances and response to complaints of unauthorized parking on vacant lots. Enforcement of the trespass ordinance will be implemented by the Town of Paradise Valley Police Department. Legal authority for this action is provided under A.R.S. § 9-240 and Town Code §10-4-3. The draft schedule for completing this work is as follows:

1. September 28, 2007- Draft ordinance completed
2. October 25, 2007- Town Council work session to receive briefing from staff, discuss, and provide feedback
3. November 15, 2007- Town Council considers ordinance for adoption
4. January 1, 2008- Ordinance implementation and enforcement

Enhanced police patrolling of vacant lots will be implemented upon adoption of this Resolution. Administration and implementation of the measure will be conducted by current departmental personnel and included as part of the departmental personnel budget for future fiscal years. This measure will be enforced by ordinance. The enforcement function will be staffed and administered under the Paradise Valley Police Department. The Town will submit progress reports to State and/or County agencies upon request.

- 2007 ■ City of Peoria indicates that through the Community Development (Code Enforcement Division), the City of Peoria will be proactive and monitor all vacant lots on a monthly basis, to ensure that trespass parking is prohibited. The Community Development Department (Code Enforcement Division) and the

Engineering Department will be responsible for implementation of the measure as required by City Code 23-76. The enhanced enforcement will be effective January 1, 2008. The seven Code Enforcement Officers from the Community Development Department (Code Enforcement Division) will be used to implement this measure, as well as other City employees that would report violators to the Code Enforcement Division. Violation of City Code 23-76 is a Civil Sanction. The City of Peoria will track all violations noted, and report violation status to Maricopa County.

2007 ■ City of Phoenix indicates the City's regulation of trespass and off-road vehicle use are based upon the City Codes discussed below.

- Trespass: Phoenix City Code, Section 23-85 prohibits entering or remaining on any real property after a reasonable request to leave by the property owner, or any other person having lawful control over such property, or a reasonable notice prohibiting entry.
- Vehicle Parking- Traffic Code: Phoenix City Code, Section 36-145 prohibits parking of any motor vehicle on any lot that is not dust-free/dustproof.
- Registered Vacant Lots and Signs: Phoenix City Code, Section 36-148 provides that property owners who have trespassing or parking on their vacant lots can post appropriate signs and register their property with the Police Department for enforcement.
- Vehicles on Vacant Lots-Traffic Code: Phoenix City Code, Section 36-62 requires that no person shall operate a vehicle on or across any portion of a vacant lot other than on an established dustproof driveway.
- City-Owned Washes and Open Space: Phoenix conducts periodic inspections of the City-owned washes, riverbeds, and other open areas to monitor and respond to vehicle trespass and off-road vehicle activity. Signs, berms, barriers, boulders, fencing, bollards and other methods are used to restrict vehicle use as necessary.
- City Parks: Phoenix City Code, Section 24-51 prohibits parking or driving any vehicle in a City park except within the designated parking areas, or other authorized areas. This includes all City parks, mountain preserves, Rio Salado Wetlands, etc.

- Goodyear Ordinance: In response to the Measure Description in the MAG Suggested List of Measures, the City reviewed the "Goodyear Ordinance" and found it to be less stringent than the Phoenix Codes. The Phoenix codes referenced above restrict all vehicle use on vacant areas while the Goodyear Ordinance allows vehicle use with the permission of the property owner.

Implementing Agency or City Department:

City of Phoenix, Parks and Recreation Department
City of Phoenix, Police Department
City of Phoenix, Office of Environmental Programs
Other City Department as necessary

Authority for Implementation:

A.R.S. Section 9-240: General Powers of Council
Phoenix City Charter, Chapter 2: General Powers, Rights, and Liabilities

References to Codes & Ordinances:

Phoenix City Code, Section 24-51: Operation & Parking of Vehicles in Parks
Phoenix City Code, Section 23-85.01: Criminal Trespass
Phoenix City Code, Section 36-62: Operation of Vehicles on Vacant Lots
Phoenix City Code, Section 36-145: Parking on Non-Dust-Free Areas
Phoenix City Code, Section 36-148: Parking in Conformance with Zoning Ordinance

Implementation is ongoing. Funding for enforcement is included in the annual operating budget for the departments listed above and is not listed as a separate budget allocation. The Police Department enforces traffic and trespass codes. The Police and Parks Recreation Departments each have off-road all-terrain vehicles specifically purchased to help enforce vehicle trespass. The City conducts enforcement of off-road vehicle activities in areas with high off-road vehicle use as problems are identified. Enforcement activities have been conducted in conjunction with the State Land Department, Maricopa County Flood Control District, when trespass occurs on adjoining properties under the control of those jurisdictions. Joint efforts with these, or other agencies, will be conducted in the future as the need arises. The Park and Recreation Department enforces the parking and vehicle use codes for City parks, mountain

preserves and other open spaces managed by the department. Inspection and control of other washes, riverbeds, and open spaces is conducted by the department who manages the property with assistance from the Office of Environmental Programs. Signs, berms, barriers, boulders, fencing, bollards and other methods are used to restrict vehicle use as necessary. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. The City will submit progress reports to State and/or County agencies upon request.

- 2007 ■ Town of Queen Creek indicates that Queen Creek will monitor vehicular trespass activity from July 1, 2007 to June 30, 2007 to determine whether a problem exists. The Town of Queen Creek Public Works Department, Community Development Department, and Parks and Recreation Department, through the authority granted to them by A.R.S. § 9-240 is responsible for implementation. Data will be gathered from July 1, 2007-June 30, 2008. If a problem exists, staff will develop a plan for review and approval by Town Council. Code Enforcement personnel will monitor unauthorized vehicular activity during the course of their normal work duties. The Town does not have a municipal law enforcement division. Trespassing violations will be referred to the Maricopa County Sheriff's Office. Code Enforcement staff will report violation of private trespass.
- 2007 ■ City of Scottsdale indicates that this measure would increase the enforcement of vehicle trespass ordinances and codes for vacant lots. Scottsdale City Code, Section 17-111.1 indicates that "No person shall park or permit to be parked any motor vehicle for the purpose of sale upon any lot or area within the city which is unpaved." On March 6, 2007 the City Council approved 9-TA-2007, which established procedures and standards regarding the use of temporary/security fencing on vacant lots and other sites. City ordinances prohibit as unlawful, vehicle use on both public and private property, which includes vacant lots. Scottsdale City Code, Section 19-14 prohibits operating, driving or leaving a vehicle on any private or public property without the owner's written permission.

Responsible Agency and Authority for Implementation:

City of Scottsdale, Police Department
City of Scottsdale, Code Enforcement Division
City of Scottsdale, Planning and Development Services Department
City of Scottsdale, Environmental and Preservation Office

Authority for Implementation:

A.R.S., Section 9-240: General Powers of Council
Scottsdale City Charter, Article I, Sec. 3: Powers of City
Scottsdale City Code, Sections 17,19 various
Scottsdale Zoning Ordinance, Section 7-700

Ongoing implementation. Funding enforcement is included in the annual operating budget for the departments and divisions listed above and is not listed as a separate budget allocation. The Police Department enforces parking, traffic and unlawful vehicle use codes. Code Enforcement Division inspectors enforce vehicle for sale on unpaved areas prohibitions. For Fiscal Year 2007/2008 there are 11 Code Enforcement inspectors, 3 specialists and a manager. A portion of each inspector's duties is dust control and vacant lot enforcement. Planning and Development Services Department inspectors enforce temporary/security fencing requirements. For Fiscal Year 2007/2008 there are 31 Planning and Development Service Inspectors (Public Works, Planning and Building inspectors) and 3 managers. A portion of each inspector's duties is dust control and vacant lot enforcement. The Environmental Preservation Office receives citizen complaints regarding dust via the Environmental Hotline and electronic reports on the city's web site. Complaints are forwarded to the appropriate inspectors for enforcement. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality the authority to enforce measures defined in the Nonattainment Area Plans. City inspectors and the Environmental Office will record and track the number of dust control complaints, including those related to vacant lots. The City will submit reports to state and/or county agencies upon request.

- 2007 ■ City of Surprise indicates that the City of Surprise, no later than March 31, 2008, will adopt or amend codes or ordinances as necessary to restrict vehicle parking and use on unpaved or unstabilized vacant lots. City Police Department, City Community Development Department, Code Enforcement Division are responsible for implementation. Funding for these tasks is included in the annual operating budget for each responsible department. City Police Department, City Community Development Department, Code Enforcement Division are responsible for enforcement. The City will submit progress reports to State and/or County agencies upon request.
- 2007 ■ City of Tempe indicates that this measure would strengthen enforcement of vehicle trespass ordinances. The City will, in connection with the implementation of committed control measures for parking and vehicle use on vacant lots, undertake a resource review to secure effective trespass enforcement. City of Tempe Development Services, Parks and Recreation and

Police Departments are responsible for implementation. The Police Department enforces traffic and trespass codes. The Parks and Recreation Department enforces the parking codes for city parks.

The resource review will be completed in twelve months of City Council approval for these measures. The staffing level for implementing the measure will be conducted as part of the resource review and review of above commitments to restricting vehicular access to unpaved lots. The Police Department will, in cooperation with the Parks and Recreation Department, use available off-road all-terrain vehicles to help enforce vehicle trespass prohibitions. The Parks and Recreation Department enforces the parking and vehicle use codes for city parks and other open spaces by inspection and control of access barriers to restrict vehicle use as necessary. Information and data will be provided on measure implementation to the MCESD, ADEQ, or MAG upon request.

- 2007 ■ City of Tolleson indicates that the City will monitor vehicle trespass activity from August 1, 2007 to August 1, 2008 to determine whether a problem exists. The Public Works, Police and Code Enforcement departments, through the authority granted to them by A.R.S. § 9-240 are responsible for enforcement. Data will be gathered from August 1, 2007 to August 1, 2008. If a problem exists, staff will develop a plan for review and approval by City Council. The Police Department and Code Enforcement is responsible for enforcing trespassing on private property. This measure will be enforced by ordinance and Arizona trespassing laws. Code Enforcement staff will report violations of private trespass.
- 2007 ■ Town of Youngtown indicates that the Town will review the Youngtown Code for changes to allow more stringent enforcement if needed. The Code Compliance Officer is responsible for implementation. Youngtown Code Chapters 8-28-Dust Control and 8.32-Nuisances. The Town will conduct a review for a possible change to the Code. Personnel funding allocated for implementation in the Code Compliance Budget. The Code Compliance Officer will enforce the measure through warnings and citations. The monitoring program will involve a comparison to other municipal codes.
- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will adopt an ordinance(s) to restrict off-road recreational motor vehicle use on unpaved surfaces and vehicular use and parking on vacant lots. In addition, the Department will coordinate with the Maricopa County Sheriff's Office to conduct enforcement initiatives which will involve enforcement of ordinances and rules to prevent and discourage off-road vehicle use and trespass on vacant lots. The initiatives will be prioritized based on complaints and in areas with high off-road vehicle and trespass activity.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 11-251 (43) to adopt and enforce necessary ordinances to regulate off-road recreational motor vehicles that are operated within the county on public lands without lawful authority or on private lands without the consent of the lawful owner or that generate air pollution.

Implementation Schedule:

Enforcement Initiative:

July - November 2007 Develop procedures and coordinate efforts with other jurisdictions

January - March 2008 Identify heavy use areas and research parcel ownership. Contact property owners for installation of control measures, 'no trespass' signs, and obtain authority to cite trespassers without owner presence

April 2008 Begin enforcement initiatives and outreach

Ordinances(s):

September 2007 Draft ordinance and conduct stakeholder workshops

March 2008 Board consideration of ordinance

No change in level of personnel or funding is anticipated for the ordinance development activities. The Maricopa County Air Quality Department Dust Compliance Division will coordinate with the Maricopa County Sheriff's Office on the enforcement initiatives. Maricopa County Measure #4 describes existing dust control vacant personnel and new personnel the Department will seek to hire for the dust control vacant lot program. The Air Quality Department's revenue for the air quality program is estimated to be \$14.4 million. Start-up costs for database development are estimated to be \$133,500. Annual database maintenance costs are estimated to be \$73,300. The enforcement process will be described in the ordinance. The Department anticipates that a citation and civil penalty will be issued to off-road recreational vehicle operators and individuals in violation of the ordinance. The Air Quality Department will track the number of enforcement initiatives and the number of citations issued.

33. Ability to assess liens on parcels to cover the cost of stabilizing them
(Recover costs of stabilizing vacant lots)

2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires a county with a

population of two million or more persons or any portion of a county within an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, no later than March 31, 2008, to adopt rule provisions, and no later than October 1, 2008, commence enforcement of those rule provisions regarding the stabilization of disturbed surfaces of vacant lots that include the following:

- (a) Reasonable written notice to the owner or owner's authorized agent or the owner's statutory agent that the unpaved disturbed surface of a vacant lot is required to be stabilized. The notice shall be given not less than thirty days before the day set for compliance and shall include a legal description of the property and the estimated cost to the county for stabilization if the owner does not comply. The notice shall be either personally served or mailed by certified mail to the owner's statutory agent, to the owner at the owner's last known address or to the address to which the tax bill for the property was last mailed.
- (b) Authority for the county to enter the lot to stabilize the disturbed surface at the expense of the owner if the vacant lot has not been stabilized by the day set for compliance.
- (c) Methods for stabilization of the disturbed surface of the vacant lot, the actual cost of stabilization and the fine that may be imposed for a violation of this section (A.R.S. § 49-474.01. A.11.).

S.B. 1552 defines a disturbed surface as a portion of the earth's surface or material placed on the earth's surface that has been physically moved, uncovered, destabilized or otherwise modified from its undisturbed native condition if the potential for the emission of fugitive dust is increased by the movement, destabilization or modification (A.R.S. § 49-474.01 B.1.).

S.B. 1552 indicates that vacant lots do not include any site of disturbed surface area that is subject to a permit issued by a control officer that requires control of PM-10 emissions from dust generating operations (A.R.S. § 49-474.01 B.2.).

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will update Rule 310.01 and may include the following provisions:

- Trackout provisions for nonpermitted sources
- Lower the threshold (vehicles per day) and specify criteria that trigger the requirement to pave or stabilize public dirt roads

- Reasonable written notice to the owner that the unpaved disturbed surface of a vacant lot is required to be stabilized. Authority for the county to enter the lot to stabilize the disturbed surface at the expense of the owner if the vacant lot has not been stabilized by the day set for compliance. Methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for a violation of this section. [Senate Bill 1552 A.R.S. § 49-474.01 (A)(11)]
- Property line provisions for nonpermitted sources

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 474.01(A)(11) requires adoption of rule provisions by March 31, 2008, and enforcement of the provisions by October 1, 2008, regarding stabilization of disturbed surfaces of vacant lots that include written notice to the owner that a vacant lot is required to be stabilized, authority for the county to enter the lot to stabilize at the expense of the owner, methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for violations.

Implementation Schedule:

Rule 310.01 Revisions:

April 2007 - Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. Maricopa County Measure #4 describes existing and new dust control vacant lot personnel the Air Quality Department will seek to hire to address increased enforcement of Rule 310.01 for vacant lots. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measure(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Senate Bill 1552 authorized the county to enter the lot to stabilize the disturbed surface, issue notices of violation, and collect monetary penalties that include the cost of stabilization. The Air Quality Department tracks the number of vacant lot inspections, number of enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310.01.

34. Increase fines for open burning

- 2007 ■ Arizona Legislature passed S.B. 1552 which increased the fines for unlawful open burning. The bill provides that a person who violates any provision of this section may be served a notice of violation and be subject to the enforcement provisions of this article to the same extent as a person violating any rule or regulation adopted pursuant to this article, except that a violation that lasts no more than twenty-four hours and that is the first violation committed by that person is subject to a civil penalty of no more than five hundred dollars (A.R.S. § 49-501 G.).

S.B. 1552 also added the imposition of a civil penalty of two hundred fifty dollars for the fourth or any subsequent violation of the residential wood burning ordinance. The ordinance is required in a county that contains any part of Area A (A.R.S. § 11-871 A. and D.4.).

- 2007 ■ Maricopa County indicates that:

- Senate Bill 1552 increased the fine for open burning from \$25 to \$500 for the first violation [A.R.S. § 49-501(G)].
- The Maricopa Air Quality Department will revise the Maricopa County Residential Woodburning Restriction Ordinance to prohibit wood burning chimineas, outdoor fire pits, and similar outdoor fires on those days for which the county has issued a no burn day restriction in accordance with Senate Bill 1552 [A.R.S. § 49-501(F)].

- The Maricopa County Air Quality Department will revise Maricopa County Rule 314 to remove fires for recreational purposes from the exemptions of unlawful burning in accordance with Senate Bill 1552 [A.R.S. § 49-501 (B)(1)] and include restrictions on ambience fireplaces in the hospitality industry.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-501 to prohibit unlawful open burning. A.R.S. § 11-871 authorizes Maricopa County to adopt, implement and enforce an ordinance relating to residential wood burning restrictions.

Implementation Schedule:

Residential Woodburning Restriction Ordinance and Rule 314 Revisions:

July 2007	Draft ordinance and rule revisions and conduct stakeholder workshops
September 2007	Oral proceeding on ordinance and rule revisions
January 2008	Board consideration of ordinance and rule revisions

No change in level of personnel or funding is anticipated for ordinance or rule development activities. The Maricopa County Air Quality Department Dust Compliance Division enforces Rule 314 through a burn permit program and responds to illegal burning complaints. The current and proposed new personnel for the Dust Compliance Division are detailed in Maricopa County Measure #4 and #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Open burning requirements are administered through a burn permit program, which includes: review of permits, and notification and permissions of the Air Quality Department and local fire agency. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of burn permits issued, the number of illegal burn complaints, the number of illegal open burning notices of violation and enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information.

35. Restrict use of outdoor fireplaces and pits and ambience fireplaces in the hospitality industry

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires in a county with a population in excess of one million two hundred thousand persons, that the county prohibit by ordinance the use of wood burning chimineas, outdoor fire pits and similar outdoor fires on those days for which the county has issued a no burn day restriction (A.R.S. § 49-501 F.).

S.B. 1552 indicates that a person who violates any provision of this section may be served a notice of violation and be subject to the enforcement provisions of this article to the same extent as a person violating any rule or regulation adopted pursuant to this article, except that a violation that lasts no more than twenty-four hours and that is the first violation committed by that person is subject to a civil penalty of no more than five hundred dollars (A.R.S. § 49-501 G.).

- 2007 ■ Maricopa County indicates that:

- Senate Bill 1552 increased the fine for open burning from \$25 to \$500 for the first violation [A.R.S. § 49-501(G)].
- The Maricopa Air Quality Department will revise the Maricopa County Residential Woodburning Restriction Ordinance to prohibit wood burning chimineas, outdoor fire pits, and similar outdoor fires on those days for which the county has issued a no burn day restriction in accordance with Senate Bill 1552 [A.R.S. § 49-501(F)].
- The Maricopa County Air Quality Department will revise Maricopa County Rule 314 to remove fires for recreational purposes from the exemptions of unlawful burning in accordance with Senate Bill 1552 [A.R.S. § 49-501 (B)(1)] and include restrictions on ambience fireplaces in the hospitality industry.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-501 to prohibit unlawful open burning. A.R.S. § 11-871 authorizes Maricopa County to adopt, implement and enforce an ordinance relating to residential wood burning restrictions.

Implementation Schedule:

Residential Woodburning Restriction Ordinance and Rule 314 Revisions:

July 2007	Draft ordinance and rule revisions and conduct stakeholder workshops
September 2007	Oral proceeding on ordinance and rule revisions
January 2008	Board consideration of ordinance and rule revisions

No change in level of personnel or funding is anticipated for ordinance or rule development activities. The Maricopa County Air Quality Department Dust Compliance Division enforces Rule 314 through a burn permit program and responds to illegal burning complaints. The current and proposed new personnel for the Dust Compliance Division are detailed in Maricopa County Measure #4 and #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Open burning requirements are administered through a burn permit program, which includes: review of permits, and notification and permissions of the Air Quality Department and local fire agency. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of burn permits issued, the number of illegal burn complaints, the number of illegal open burning notices of violation and enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information.

36. Require barriers in addition to Rule 310 stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits

- 2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will revise Rule 310 and Rule 316 and may incorporate the following provisions:

Proposed Rule 310 revisions:

- Require the permittee for any site of 5 acres or more subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Dust Control Coordinator trained at all times during primary dust generating operations. The Dust Control Coordinator has full authority to ensure that dust control measures are implemented on site.

The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.

- Require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.
- Require barriers in addition to stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.
- Require immediate cleanup of trackout at ≥ 25 feet.
- No visible emissions across the property line.

Proposed Rule 316 revisions:

- Require the permittee for any site of 5 acres or more of disturbed surface area subject to a permit requiring control of PM_{10} emissions from dust generating operations to have on-site at least one Fugitive Dust Control Technician trained at all times during primary dust generating operations. The Fugitive Dust Control Technician has full authority to ensure that dust control measures are implemented on site. The Fugitive Dust Control Technician shall be responsible for managing dust prevention and dust control on the site.
- Specify requirements for operation of watering systems.

In addition, the Maricopa County Air Quality Department will evaluate the method of data reduction for opacity observations and may revise Rule 310 and Rule 316 as needed.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 (E) established requirements for a Dust Control Coordinator and training programs for the suppression of PM_{10} emissions from sources of PM_{10} .

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007 Draft rule revisions and conduct stakeholder workshops

December 2007 Oral proceeding on rule revisions

March 2008 Board consideration of rule revisions

Rule 316 revisions:

April 2007-Sept. 2007 Draft rule revisions and conduct stakeholder workshops

December 2007 Oral proceeding on rule revisions

March 2008 Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program is contained in Maricopa County Measure #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310 and Rule 316 sources; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316.

37. Reduce the tolerance of trackout to 25 feet before immediate cleanup is required for construction sites be placed in Maricopa County Rule 310

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will revise Rule 310 and Rule 316 and may incorporate the following provisions:

Proposed Rule 310 revisions:

- Require the permittee for any site of 5 acres or more subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Dust Control Coordinator trained at all times during primary dust generating operations. The Dust Control Coordinator has full authority to ensure that dust control measures are implemented on site. The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.
- Require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.
- Require barriers in addition to stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.
- Require immediate cleanup of trackout at ≥ 25 feet.
- No visible emissions across the property line.

Proposed Rule 316 revisions:

- Require the permittee for any site of 5 acres or more of disturbed surface area subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Fugitive Dust Control Technician trained at all times during primary dust generating operations. The Fugitive Dust Control Technician has full authority to ensure that dust control measures are implemented on site. The Fugitive Dust Control Technician shall be responsible for managing dust prevention and dust control on the site.
- Specify requirements for operation of watering systems.

In addition, the Maricopa County Air Quality Department will evaluate the method of data reduction for opacity observations and may revise Rule 310 and Rule 316 as needed.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473,

designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 (E) established requirements for a Dust Control Coordinator and training programs for the suppression of PM₁₀ emissions from sources of PM₁₀.

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

Rule 316 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program is contained in Maricopa County Measure #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310 and Rule 316 sources;

the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM_{10} standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316.

38. No visible emissions across the property line be placed in Maricopa County Rule 310 and 310.01, and in local ordinances for nonpermitted sources as appropriate

2007 ■ City of Peoria indicates that this measure will require the City to develop an ordinance or assist Maricopa County through Rule 310 that prohibits dust to cross property lines. The City of Peoria Engineering and Community Development Departments will be the responsible agency to develop the ordinance and/or coordinate with Maricopa County. The City of Peoria Engineering Department will work with Maricopa County to determine the focus of the measure, i.e., vacant lots the target? Construction activities? Also, what will be the documentation necessary to determine a violation? Based on these items determined, an ordinance will be updated by October, 2007 and enforced January, 2008. Depending on the final determination, the Engineering and/or the Community Development Departments will be responsible for enforcement. Depending on the final determination, the Engineering and/or the Community Development Department will document the violations.

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will revise Rule 310 and Rule 316 and may incorporate the following provisions:

Proposed Rule 310 revisions:

- Require the permittee for any site of 5 acres or more subject to a permit requiring control of PM_{10} emissions from dust generating operations to have on-site at least one Dust Control Coordinator trained at all times during primary dust generating operations. The Dust Control Coordinator has full authority to ensure that dust control measures are implemented on site. The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.
- Require that the cargo compartments of trucks whether loaded or empty be fully enclosed prior to traveling on paved public roads.
- Require barriers in addition to stabilization requirements for construction where all activity has ceased, except for sites in compliance with storm water permits.
- Require immediate cleanup of trackout at ≥ 25 feet.

- No visible emissions across the property line.

Proposed Rule 316 revisions:

- Require the permittee for any site of 5 acres or more of disturbed surface area subject to a permit requiring control of PM₁₀ emissions from dust generating operations to have on-site at least one Fugitive Dust Control Technician trained at all times during primary dust generating operations. The Fugitive Dust Control Technician has full authority to ensure that dust control measures are implemented on site. The Fugitive Dust Control Technician shall be responsible for managing dust prevention and dust control on the site.
- Specify requirements for operation of watering systems.

In addition, the Maricopa County Air Quality Department will evaluate the method of data reduction for opacity observations and may revise Rule 310 and Rule 316 as needed.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 49-474.05 (E) established requirements for a Dust Control Coordinator and training programs for the suppression of PM₁₀ emissions from sources of PM₁₀.

Implementation Schedule:

Rule 310 revisions:

April 2007-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

Rule 316 revisions:

April 2007-Sept. 2007 Draft rule revisions and conduct stakeholder workshops

December 2007 Oral proceeding on rule revisions

March 2008 Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources. A detailed description of the Dust Compliance Division level of personnel for the dust control permit compliance program is contained in Maricopa County Measure #8. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the number of permits and inspections of Rule 310 and Rule 316 sources; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316.

2007 ■ Maricopa County indicates that the Maricopa County Air Quality Department will update Rule 310.01 and may include the following provisions:

- Trackout provisions for nonpermitted sources
- Lower the threshold (vehicles per day) and specify criteria that trigger the requirement to pave or stabilize public dirt roads
- Reasonable written notice to the owner that the unpaved disturbed surface of a vacant lot is required to be stabilized. Authority for the county to enter the lot to stabilize the disturbed surface at the expense of the owner if the vacant lot has not been stabilized by the day set for compliance. Methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for a violation of this section. [Senate Bill 1552 A.R.S. § 49-474.01 (A)(11)]

■ Property line provisions for nonpermitted sources

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513. A.R.S. § 474.01(A)(11) requires adoption of rule provisions by March 31, 2008, and enforcement of the provisions by October 1, 2008, regarding stabilization of disturbed surfaces of vacant lots that include written notice to the owner that a vacant lot is required to be stabilized, authority for the county to enter the lot to stabilize at the expense of the owner, methods for stabilization, the actual cost of stabilization, and the fine that may be imposed for violations.

Implementation Schedule:

Rule 310.01 Revisions:

April 2007 - Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

No change in level of personnel or funding is anticipated for rule development activities. Maricopa County Measure #4 describes existing and new dust control vacant lot personnel the Air Quality Department will seek to hire to address increased enforcement of Rule 310.01 for vacant lots. The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million.

Rule 310.01 requirements are administered through an inspection program which includes stabilization limitation requirements. Enforcement starts with a letter to the parcel owner. Owners/operators are required to submit, in writing, to the Air Quality Department a description of the control measure(s) to be implemented within 30 days. If no contact has been made, no control measures have been instituted, or stabilization has not been established within 60 days of receipt then a notice of violation is issued to the parcel owner. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Senate Bill 1552 authorized the county to enter the lot to stabilize the disturbed

surface, issue notices of violation, and collect monetary penalties that include the cost of stabilization. The Air Quality Department tracks the number of vacant lot inspections, number of enforcement actions, amount of penalties assessed, and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310.01.

39. Modeling cumulative impacts-The measure would need further definition by Maricopa County and the Arizona Department of Environmental Quality and be subject to input to ensure that unintended consequences for temporary uses are not created

- 2007 ■ Maricopa County indicates that the County will work with the Arizona Department of Environmental Quality to develop and implement a cumulative air quality modeling policy and guidance to prevent exceedances of the air quality standards caused by the clustering of numerous small to moderate sized sources.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. §49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

December 2007 Develop cumulative air quality modeling policy and guidance

January 2008 Effective date of cumulative air quality modeling policy

Cumulative air quality modeling will be accommodated as part of the air quality permit application process and handled by the Maricopa County Air Quality Department's existing Air Quality Permit Engineering Division. Air quality permit requirements are administered through a permit program, which includes: review of permits, inspections of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. The Air Quality Department tracks the

number of permits and inspections of permitted sources; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM₁₀ standard. The Department will continue to track this information.

40. MAG member agencies reexamine existing ordinances to ensure that nonpermitted sources, such as unpaved parking, unpaved staging areas, unpaved roads, unpaved shoulders, vacant lots and open areas, receive priority attention

- 2007 ■ City of Peoria indicated that the City of Peoria will review all of its ordinances that affect or regulate nonpermitted (direct or indirect) sources. The Engineering Department, with assistance of the Police Department, Community Development Department, and other Departments as needed, will review all of the pertinent ordinances to ensure that the City is doing everything that it can to prevent nonpermitted sources. Staff will submit to Mayor and Council all necessary ordinance drafts by October 2007.

41. Forward to Governor's Agricultural Best Management Practices Committee that cessation of tilling be required on high wind days and that agricultural best management practices be required in existing Area A

- 2007 ■ Arizona Legislature passed S.B.1552 in 2007 which defined regulated area for the purposes of agricultural best management practices to mean the Maricopa PM-10 Nonattainment Area and any portion of Area A that is located in a county with a population of two million or more persons (A.R.S. § 49-457 H. and N.6.).

S.B. 1552 requires that the Agricultural Best Management Practices Committee for regulated agricultural activities established under A.R.S. § 49-457 adopt the rules required by A.R.S. § 49-457 as amended by this act, as interim rules with an immediate effective date in compliance with A.R.S. § 41-1032 in order to comply with the December 31, 2007 deadline imposed by the United States Environmental Protection Agency for failure to attain the national ambient air quality standard for PM-10 on or before December 31, 2006. The rules shall have an immediate effective date. Interim rules are exempt from A.R.S. title 41, chapter 6, article 3 except that the committee shall submit the rules for publication and the secretary of state shall publish the rules in the Arizona administrative register (Section 20 of S.B. 1552).

- 2007 ■ Governor's Agricultural Best Management Practices Committee indicates that the interim rule is being submitted for inclusion in the Five Percent Plan for PM-10. The interim rule includes Cessation of Night Tilling as an option on the list of Tillage and Harvest best management practices. The interim rules indicate that "Cessation of Night Tilling" means the discontinuation of night tilling on high pollution advisory days during stagnant air conditions, "High Pollution Advisory" means a public notification issued by the Department when the ambient

concentrations of PM-10 may exceed the federal health standard (R18-2-610. Definitions for R18-2-611 7. and 24. and R18-2-611 E.8.).

42. The Arizona State Legislature provide funding to the Arizona Department of Environmental Quality for four agriculture dust compliance officers for a total of five inspectors

2007 ■ Arizona Department of Environmental Quality indicates that the Arizona Legislature passed H.B. 2781 General Appropriation; 2007-2008; 2008-2009 in 2007 which provided funding to the Department for two additional dust compliance officers.

43. MAG allocate \$5 million in FY 2007 MAG federal funds matched on a 50/50 basis by MAG member agencies for paving dirt roads and shoulder projects and that these projects be immediately submitted to MAG for consideration at the July meetings of the MAG Management Committee and Regional Council for an amendment to the Transportation Improvement Program. These funds would be on a nonsupplanting basis for new projects

2007 ■ Maricopa Association of Governments Regional Council, on May 23, 2007, approved additional measures, including the allocation of \$5 million in FY 2007 MAG federal funds for PM-10 paving projects, for the Suggested List of Measures to Reduce PM-10 Particulate Matter. On July 25, 2007, the MAG Regional Council approved an amendment to the FY 2007-2011 MAG Transportation Improvement Program to include the Prioritized List of Proposed PM-10 Paving Projects for FY 2007 MAG Federal Funds.

44. Maricopa County should increase consistent enforcement in areas where PM-10 violations continue to occur, along with efforts throughout the region. When an area continually experiences higher PM-10 concentrations than other areas, increased enforcement in areas experiencing high monitor readings is needed to protect public health

2007 ■ Maricopa County indicates that this measure will increase the number of proactive inspections conducted at Rule 310 and Rule 316 permitted facilities as follows:

- Increase inspection frequency to 3 inspections per year (from 1) for dust control permitted sources with sites <10 acres.
- Increase inspection frequency to 8 inspections per year (from 5) for dust control permitted sources with sites ≥10 acres.
- Increase inspection frequency to 5 inspections per year (from 4) for nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling sources.

In addition, the Maricopa County Air Quality Department conducts proactive inspections on a nonattainment area-wide basis to determine compliance with all requirements. The Air Quality Department also prioritizes inspections based on the following factors: complaints received, number of sources, number of NOVs issued, and ambient air monitoring data. For example, when a high risk dust control action forecast is issued by ADEQ or when monitored readings become elevated, inspectors conduct source surveillance beginning in areas of high emission densities and fanning out from there to ensure consistent compliance throughout the nonattainment area.

The Maricopa County Board of Supervisors is authorized by A.R.S. § 49-479 to adopt rules for air pollution control and by A.R.S. § 49-480 to establish, administer and enforce a program for air quality permits. The Board adopted rules establishing an air quality permit program and pursuant to A.R.S. § 49-473, designated the Air Quality Department to issue permits and administer and enforce the permit program. By operation of A.R.S. § 49-471, the executive head of the department designated under A.R.S. § 49-473 serves as the Air Pollution Control Officer. The Air Pollution Control Officer is specifically authorized to take the enforcement actions set forth in A.R.S. §§ 49-502, 49-511, 49-512 and 49-513.

Implementation Schedule:

Staffing:

January 2008	Hire 9 compliance inspectors, 3 compliance supervisors, 2 permit technicians, and 3 administrative support supervisors for the dust control permit compliance (Rule 310) program
June 2008	Hire 25 compliance inspectors, 1 compliance supervisor, 4 permit technicians for the dust control permit compliance (Rule 310) program
June 2008	Hire 5 compliance inspectors to inspect Rule 316 sources (nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling sources)

Rule 280:

Aug-Sept. 2007	Draft rule revisions and conduct stakeholder workshops
December 2007	Oral proceeding on rule revisions
March 2008	Board consideration of rule revisions

The Maricopa County Air Quality Department Dust Compliance Division inspects and determines compliance at fugitive dust sources including: Rule 310 (Fugitive Dust), Rule 310.01 (Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways) and most Rule 316 (Nonmetallic Mineral Processing) sources. Currently, the Dust Compliance Division has 1 division manager and the following level of personnel for the dust control permit compliance program (Rule 310).

Position	Dust Control Permit Compliance (Rule 310) Personnel
AQ Inspector Supervisor	5
AQ Inspector	20
Administrative Support	3
Total	28

The Maricopa County Air Quality Department will seek approval to hire the following personnel to address increased inspection frequency for permitted facilities:

- 34 additional dust control permit compliance inspectors, 4 compliance supervisors, 6 permit technicians, and 3 administrative support supervisors.
- 5 compliance inspectors to inspect nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling facilities.

The Air Quality Department's Air Quality Enforcement Division has 1 division manager, 5 enforcement officers, and 1 administrative support personnel. The Department will seek to hire 5 additional enforcement officers.

The Maricopa County Air Quality Department's FY 2007-08 revenue is approximately \$14.4 million. Annual costs associated with increased personnel are listed below:

- Additional dust control permit compliance personnel=\$2.8 million
- Additional compliance inspectors for nonmetallic mineral processing plants, concrete plants, asphaltic concrete plants, and yard/stockpiling= \$373,000
- Additional enforcement officers=\$406,000

Maricopa County will evaluate revenues and expenditures anticipated to meet the Five Percent Plan commitments and will propose an increase in fees or additional resources by December 2007, if necessary. Maricopa County Measure #4 describes existing and new dust control vacant lot compliance personnel the Air Quality Department will seek to hire.

Rule 310 requirements are administered through a visual inspection program and a permit program which includes review of permits, inspection of facilities, performance of compliance test methods, and review of records and activities. Rule 316 requirements are administered through a permit program, which includes: review of permits, inspection of facilities, source testing of equipment, and review of records and activities. The Air Quality Department's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation. Maricopa County Measure #4 describes the enforcement program for Rule 310.01. In addition, Air Quality Department inspectors conduct surveillance of fugitive dust sources in the county on days that are deemed high risk for PM_{10} . Sources observed violating the PM_{10} standards will be issued notices of violation.

The Air Quality Department tracks the number of dust control permits and the number of nonmetallic mineral processing (Rule 316) sources; the number of dust control permit compliance (Rule 310) and nonmetallic mineral processing (Rule 316) inspections; the number of enforcement actions; amount of penalties assessed; and compliance with the 24-hour PM_{10} standard. The Department will continue to track this information and will perform a rule effectiveness study in 2009 to evaluate compliance with Rule 310 and Rule 316. Maricopa County Measure #4 describes the Air Quality Department monitoring program for Rule 310.01.

ADDITIONAL COMMITMENTS FOR MEASURES NOT ON THE SUGGESTED LIST

45. Prohibit use of leaf blowers on unstabilized surfaces

- 2007 ■ Arizona Legislature passed S.B. 1552 which requires that any county that contains any portion of Area A no later than March 31, 2008, adopt; implement and enforce an ordinance that prohibits the operation of leaf blowers except on surfaces that have been stabilized with asphaltic concrete, cement concrete, hardscape, penetration treatment of bituminous material and seal coat of bituminous binder and a mineral aggregate, decomposed granite cover, crushed granite cover, aggregate cover, gravel cover, or grass or other continuous vegetative cover, or any combination of those stabilizers. (A.R.S. § 11-877 A.3.).

S.B. 1552 requires in a county with a population of two million or more persons or any portion of a county within an area designated by the Environmental Protection Agency as a Serious PM_{10} Nonattainment Area or Maintenance

Area that was designated as a Serious PM-10 Nonattainment Area that after March 31, 2008, no person may operate a leaf blower except on surfaces that have been stabilized with asphaltic concrete, cement concrete, hardscape, penetration treatment of bituminous material and seal coat of bituminous binder and a mineral aggregate, decomposed granite cover, crushed granite cover, aggregate cover, gravel cover, or grass or other continuous vegetative cover, or any combination of those stabilizers. (A.R.S. § 49-457.01. C.).

S.B. 1552 exempts any site that has a permit issued by a control officer for the control of fugitive dust from dust generating operations. (A.R.S. § 11-877 B. and § 49-457.01. G.).

46. Outreach to off-road vehicle purchasers

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires that in a county with a population of two million or more persons or any portion of a county in an area designated by the Environmental Protection Agency as a Serious PM-10 Nonattainment Area or a Maintenance Area that was designated as a Serious PM-10 Nonattainment Area, that any person who rents or sells in the normal course of business off-highway vehicles, all-terrain vehicles or off-road recreational motor vehicles, other than golf carts sold to public or private golf courses, shall provide to the buyer or renter of the vehicle printed materials that are approved by the Department pursuant to this section (A.R.S. § 49-457.04 A. and C.).

The Department shall produce printed materials and distribute those materials to persons who sell or rent off-highway vehicles, all-terrain vehicles or off-road recreational motor vehicles. The printed materials shall be designed to educate and inform the user of the vehicle on methods for reducing the generation of dust and shall include information regarding dust control ordinances and restrictions that may be applicable. The Department shall make available on the Department's website the printed materials in a format that is accessible to the public (A.R.S. § 49-457.04 B.).

47. Ban open burning during the ozone season
(This measure also reduces PM-10 emissions)

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which specifies that from May 1, through September 30 each year, it is unlawful for any person to ignite, cause to be ignited, permit to be ignited or suffer, allow or maintain any open outdoor fire in Area A (A.R.S. § 49-501 A).

S.B. 1552 indicates that a person who violates any provision of this section may be served a notice of violation and be subject to the enforcement provisions of this article to the same extent as a person violating any rule or regulation

adopted pursuant to this article, except that a violation that lasts no more than twenty-four hours and that is the first violation committed by that person is subject to a civil penalty of no more than five hundred dollars (A.R.S. § 49-501 G.).

48. Require residential woodburning ordinances to include no burn restrictions on high pollution advisory days

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires that on or before October 31, 2007, a county that contains any portion of Area A shall amend the residential wood burning restrictions ordinance to include a no burn restriction for any high pollution advisory day forecast by the Department of Environmental Quality for particulate matter. S.B. 1552 adds the imposition of a civil penalty of two hundred fifty dollars for the fourth or any subsequent violation of the ordinance (A.R.S. § 11-871 B. and D.4.).

49. Allow Peace Officer enforcement of load covering

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires that for the purpose of highway safety or air pollution prevention, a person shall not drive or move a vehicle on a highway unless the vehicle is constructed or loaded in a manner to prevent any of its load from dropping, sifting, leaking or otherwise escaping from the vehicle (A.R.S. § 28-1098 A.).

S.B.1552 exempts minor pieces of agricultural materials such as leaves and stems from agricultural loads and sufficient sand that may be dropped for the purpose of securing traction. Water or another substance may be sprinkled on a roadway in cleaning or maintaining the roadway (A.R.S. § 28-1098 A.).

50. Require two agricultural best management practices

- 2007 ■ Arizona Legislature passed S.B. 1552 in 2007 which requires at least two agricultural best management practices to demonstrate compliance with applicable provisions of the general permit no later than December 31, 2007. The Director shall submit the rule to the Environmental Protection Agency as a revision to the applicable implementation plan no later than December 31, 2007 (A.R.S. § 49-457 H.).

S.B. 1552 requires that the Agricultural Best Management Practices Committee for regulated agricultural activities established under A.R.S. § 49-457 adopt the rules required by A.R.S. § 49-457 as amended by this act, as interim rules with an immediate effective date in compliance with A.R.S. § 41-1032 in order to comply with the December 31, 2007 deadline imposed by the United States Environmental Protection Agency for failure to attain the national ambient air quality standard for PM-10 on or before December 31, 2006. The rules shall have an immediate effective date. Interim rules are exempt from A.R.S. title 41,

chapter 6, article 3 except that the committee shall submit the rules for publication and the secretary of State shall publish the rules in the Arizona administrative register (Section 20 of S.B. 1552).

51. Conduct an inventory of dirt roads, alleys and estimated traffic counts

2007 ■ City of El Mirage will conduct an inventory of dirt roads, alleys and estimated traffic counts. The City of El Mirage will update this inventory annually to measure progress in eliminating dirt roads and alleys. The City of El Mirage Public Works Department will develop an inventory of dirt roads, alleys and estimated traffic counts. This will assist in the development of a plan to eliminate these dirt roads by the following methods:

1. Pave.
2. Apply chemical/organic stabilizers in sufficient concentration and frequency to maintain a stabilized surface.
3. Apply and maintain surface gravel uniformly to stabilize the surface.
4. A stabilization method approved by the city.

The City of El Mirage will update this inventory annually to measure the progress in eliminating dirt roads and alleys. The City of El Mirage Public Works Department, Streets Division is responsible for implementation. The Public Works Department will begin inventory July 2007 and have completed by March 2008. Current personnel and funding is available in the FY 2007/08.

52. Coordinate public transit services with Pinal County

2007 ■ Arizona Department of Transportation indicates that this measure would involve coordination between Pinal County and public transit agencies in Maricopa County to provide transit service and reduce the number of vehicle trips between two counties. ADOT Public Transit Division distributes Federal Transit Administration 5311 funds to fund rural public transit systems to service communities with under 50,000 populations. Recently the City of Maricopa received funding for a regional transit service which will provide public bus transportation between the City of Maricopa in Pinal County and the City of Phoenix within Maricopa County. The intent of the service is to provide commuters a public transportation service as well as transit dependent population a means to travel outside of the City of Maricopa for services. ADOT is also conducting a Rural Transit Needs Study to; collect and analyze relevant data, including population, employment, income levels, automobile ownership and travel patterns; identify national trends in addressing rural transit needs;

obtain key stakeholder input on current gaps in transit service; develop projections for future transit demand; identify and quantify potential solutions; and develop a strategic transit plan for future improvements.

Pursuant to A.R.S. § 28-104, ADOT has the responsibility for maintenance of facilities on the State Highway Systems, A.R.S. § 28-367 also gives ADOT the authority to receive, allocate, control and disperse all monies designated for state public transit programs by federal or state law or rule. Implementation schedule will depend on the level and degree of services offered, the City of Maricopa, service should be in place by end of 2008 and ADOT Rural Transit Needs Study will be completed with future recommendations by the end of 2007.

In FY 2007, ADOT Public Transit Division received over \$8.3 million in Federal Transit Administration 5311 funds. The City of Maricopa will receive in October 2007 (FY 2008) \$437,000 of Federal Transit Administration funding to support a regional transit service. ADOT Public Transportation Division allocated \$250,000 for the Rural Transit Needs Study. A.R.S., Section 49-406, grants Maricopa County and the Arizona Department of Environmental Quality (ADEQ) the authority to enforce measures defined in the nonattainment area plans. The ADOT Public Transit Division tracks project completion data and can provide additional progress reports or other documentation of implementing this measure, to the Maricopa County Air Quality Division or ADEQ upon request.

53. Repave or overlay paved roads with rubberized asphalt

- 2007 ■ Arizona Department of Transportation indicates that the Arizona Department of Transportation would commit to repaving or overlaying paved roads with rubberized asphalt that reduces PM-10 emissions by reducing vehicle tire wear. The PM-10 emissions rates from tire wear are 30 to 50 percent lower than on Portland Cement Concrete. ADOT's program (Quiet Pavement) to overlay freeways with rubberized asphalt for the purpose of noise mitigation was announced in December 2002 and began in September 2003. A single program with two purposes would continue, namely applying a rubberized asphalt overlay for the State Highway System to reduce PM-10 emissions and to mitigate noise. Measure 07-DC-31 would be a commitment to continue the program specifically for the purpose of PM-10 emissions reduction. Rubberized asphalt overlay is used both in repaving and in the initial construction of new freeway sections.

The units are lane miles. The emission reductions attributable to vehicles are converted to emission reductions per lane mile by taking the average daily traffic (ADT) into account. The emission reduction estimates per lane mile per year at two different ADT values appear below:

ADT (vehicles/day)	Tons/Lane Mile/Year
17,000	0.034
2,500	0.005

ADOT has the responsibility to maintain and operate state highways pursuant to A.R.S. § 28-332. ADOT has the responsibility to participate in nonattainment area planning and to make and implement any emission limitation or other control measure pursuant to A.R.S. § 49-406. The Quiet Pavement Program-Phase X includes paving scheduled for March 2008 on 2.43 miles of I-10 and on 2.78 miles of SR 143. Specific scheduling has not yet occurred for subsequent phases of the Quiet Pavement Program but noise mitigation funds are programmed into the Regional Transportation Plan (RTP) for the years following the completion of Phase X (see below). The RTP includes commitments to fund mitigation projects which include rubberized asphalt for the purposes of noise mitigation; the PM-10 emission reduction benefit would be realized concurrently with the noise mitigation benefit, with no additional funding. Funding of Phase X comprises \$14.5M in RTP Noise Mitigation funds. \$20.4M in additional RTP Noise Mitigation funds appear in the 2007 RTP draft freeway/highway life cycle program FY 2008-FY 2026.

The measure would be carried out by ADOT and is already programmed into ADOT's highway construction planning and pavement preservation projects. An enforcement program would, therefore, not be applicable to the measure. The ADOT Intermodal Transportation Division tracks project completion data for pavement preservation projects, key project data would include the locations, lane miles, and completion dates. ADOT could apply the estimated emission reduction factors to the pavement preservation project lane miles completed each year and submit progress reports or any additional records of implementation to the Maricopa County Air Quality Division or ADEQ, upon request.

TRACKING PLAN IMPLEMENTATION

The Maricopa County Air Quality Department determines reasonable further progress and reviews the implementation status of the various measures contained in the air quality plans. In order to accurately monitor or track plan implementation, the Maricopa Association of Governments will provide assistance by issuing a report on the status of the implementation of the committed measures for this region by the cities, towns, Maricopa County and State. The report would then be made available to the Governor's Office, Legislature, the Arizona Department of Environmental Quality and the Environmental Protection Agency. The Maricopa Association of Governments will also conduct an inventory of dirt roads and estimated traffic counts by jurisdiction to measure progress in

eliminating dirt roads. The Maricopa County Air Quality Department will continue to have the responsibility for conducting ambient air quality monitoring.

The Arizona Legislature passed S.B. 1552 in 2007 which includes reporting requirements for the enforcement of PM-10 measures. Any city, town and county located in a Serious PM-10 Nonattainment Area or a Maintenance Area that was a Serious PM-10 Nonattainment Area is required to submit reports on particulate enforcement to the Joint Legislative Budget Committee on June 1 and December 1 in 2008 and 2009. The reports will include the: number of notices of violation issued, fines or penalties assessed or other sanctions imposed for particulate violations; number of inspectors or other enforcement personnel employed for purposes of enforcing statutes, rules or ordinances related to particulates; the number of miles of streets, roads, alleys, shoulders and vacant areas paved or otherwise stabilized; and other information relevant to enforcement of particulate measures in the legislation (S.B. 1552, Section 23).

A State Air Quality Study Committee was also established in S.B. 1552. Among its many duties, the committee will review the implementation and enforcement of particulate and ozone control measures in the legislation and the Five Percent Plan for PM-10; examine the need to adopt additional particulate and ozone control measures; review and examine other air quality control measures to ensure current and future compliance with the National Ambient Air Quality Standards; and submit a report of its findings and recommendations to the Governor, President of the Senate, and Speaker of the House by December 31, 2009 (S.B. 1552, Section 24).

Supplemental to these tracking efforts, the Maricopa Association of Governments conducts traffic counts periodically and publishes regional traffic flow maps. MAG also conducts vehicle occupancy studies and performs special traffic volume and speed studies, as needed. Phoenix Public Transit continuously monitors transit ridership for each month. The Regional Public Transportation Authority will also be collecting transit and carpooling ridership information. The Arizona Department of Environmental Quality continuously monitors the number of vehicles inspected in the Vehicle Emissions Inspection Maintenance Program, the number of vehicles failing the test, and the improvement in tail pipe emissions after failed vehicles are repaired.

In addition, the MAG Air Quality Technical Advisory Committee will review the information pertaining to the implementation of measures. The committee will also review the air quality monitoring data to assist in tracking air quality improvement over time.

ASSURANCES THAT THE STATE HAS THE AUTHORITY TO IMPLEMENT THE MEASURES IN THE PLAN

In order to comply with Section 110(a)(2)(E) of the Clean Air Act, a State law was passed in 1992 which provides an approach for assurances that State and local committed measures will be adequately implemented (A.R.S. Section 49-406 I. and J.). If any person (includes State, County, local governments, regional agencies, and other entities) fails to

implement a committed measure, the County would file an action in Superior Court to have the Court order that the measure be implemented. Likewise, the Director of the Arizona Department of Environmental Quality will backstop the County if it fails to implement a committed measure or if the County fails to backstop the local governments and regional agencies (see Appendix B, Exhibit 4).

Regarding committed measures, A.R.S. Section 49-406 G. (passed by the Legislature in 1992) requires that each agency which commits to implement any control measure contained in the State Implementation Plan must describe the commitment in a resolution. The resolution must be adopted by the appropriate governing body of the agency. State law also requires the entity to specify the following information in the resolutions: (1) its authority for implementing the limitation or measure as provided in statute, ordinance, or rule; (2) a program for the enforcement of the limitation or measure; and (3) the level of personnel and funding allocated to the implementation of the measure.

As noted in the MAG regional air quality plans, the action taken by the MAG Regional Council to approve the Suggested Measures and Adopted Plan Measures does not commit each jurisdiction to implement those measures. As indicated in the resolutions and commitments, each jurisdiction determines which measures are reasonably available for implementation by that jurisdiction.

CHAPTER SEVEN

DEMONSTRATION OF ANNUAL FIVE PERCENT REDUCTIONS IN PM-10 EMISSIONS

Chapter Seven demonstrates that the committed control measures in the MAG 2007 Five Percent Plan for PM-10 meet the annual five percent reductions in PM-10 emissions, as required by Clean Air Act. Section 189(d) of the Clean Air Act requires that the Five Percent Plan provide, from the date of submission until attainment, an annual reduction in PM-10 emissions of not less than five percent of the emissions in the most recent inventory prepared for the area.

This chapter describes the committed control measures that provide annual reductions of at least five percent of the latest emissions inventory for 2007, the year that the plan is being submitted. The annual five percent reductions are shown for 2008 through 2010, when attainment is achieved. Attainment can not be achieved before 2010, because attainment of the 24-hour PM-10 standard requires three years of clean data at all monitors. Since the Five Percent Plan was prepared and submitted in 2007, the committed control measures in the plan generally become effective after the plan is submitted. The committed control measures in the plan will reduce PM-10 emissions and concentrations throughout the PM-10 nonattainment area in 2008, 2009 and 2010, which will enable expeditious attainment at the monitors by December 31, 2010.

There are fifty-three committed measures documented in Chapter Six of the Five Percent Plan. The emissions reductions for twenty-five committed measures have been quantified to demonstrate the annual five percent reduction in PM-10 emissions. The twenty-five committed measures in the Five Percent Plan are called committed control measures. The methods and assumptions used in quantifying the committed control measures are documented in Chapter III of the Technical Support Document for the Five Percent Plan (TSD) (Appendix C, Exhibit 1).

Nine additional committed measures were quantified to meet the requirements for contingency measures. These are described in Chapter Eight. Some of the fifty-three committed measures were not readily quantifiable and no PM-10 emissions reduction credit was taken for these measures. However, these committed measures serve to reinforce the benefits of the quantified measures and represent additional efforts by the region to reduce PM-10 emissions and improve air quality.

MEASURES QUANTIFIED TO MEET THE ANNUAL FIVE PERCENT REQUIREMENT

The twenty-five measures that were quantified to meet the requirement to reduce 2007 PM-10 emissions by five percent in 2008, 2009 and 2010 are described in this section. The emissions reduction benefits of each measure are provided at the end of the description. The base case emissions and reductions referred to below represent tons per

year in the PM-10 nonattainment area. As indicated previously, the detailed calculations of the emissions reductions are described in Chapter III of the TSD.

Measure #2 - Extensive Dust Control Training Program

Maricopa County has committed to hire two dust control compliance and two administrative support personnel by December 2007 to coordinate and conduct the extensive dust control training program. This program is expected to increase compliance with Maricopa County Rule 310 for construction sources by providing a larger number of construction workers and supervisors with training on the fugitive dust control rules and techniques to avoid and suppress dust. The program is expected to ramp-up over the next three years. Due to the training, Rule 310 compliance is expected to increase from the base compliance rate of 51 percent in 2007 to 52 percent in 2008, 54 percent in 2009, and 55 percent in 2010. The base compliance rate was obtained from a rule effectiveness study documented by the Maricopa County Air Quality Department in the 2005 Periodic Emission Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area, May 2007 (Appendix B, Exhibit 1). The emission reductions attributable to Measure #2 are summarized below.

	2008	2009	2010
Reductions due to Measure #2 (tons/year)	565	1,694	2,258
% reduction in total 2007 PM-10 emissions	0.6%	1.7%	2.3%

Measure #3 - Dust Managers At Construction Sites of 50 Acres and Greater and Measure #16 - Require Dust Coordinators at Earthmoving Sites of 5-50 Acres

Measures #3 and #16 will reduce PM-10 emissions by requiring on-site supervision of dust control operations at construction sites. Measure #16 will also reduce emissions at permitted sources of PM-10, such as non-metallic mineral processing facilities. Maricopa County committed to implement these measures as part of Maricopa County Measure 3.

It is anticipated that Measures #3 and #16 will improve compliance with the Maricopa County fugitive dust control rules incrementally over the next three years, as the dust control coordinators (Rule 310) and fugitive dust control technicians (Rule 316) receive extensive training under Measure #2, become familiar with the strengthened rules (e.g., Measures #6 and #36-38), and apply more effective techniques to avoid or reduce PM-10 emissions. Due to implementation of Measures #3 and #16, compliance with Rule 310 is expected to increase by three percent in 2008, five percent in 2009, and seven percent in 2010.

Due to the requirement for fugitive dust control technicians on permitted sites of 5 acres or more, Measure #16 is also expected to improve compliance with Maricopa County Rule 316 for non-metallic mineral processing. The base compliance rate for Rule 316 of 54 percent is expected to increase by three percent in 2008, six percent in 2009, and nine percent in 2010.

The benefits are reduced by 25 percent in 2008 to account for the March 2008 implementation date for revisions to the Maricopa County rules. The total emission reductions due to increased compliance with Rules 310 and 316 are:

	2008	2009	2010
Reductions due to Measures #3 & #16 (tons/year)	1,306	2,923	4,109
% reduction in total 2007 PM-10 emissions	1.3%	3.0%	4.2%

Measure #8 - Conduct Nighttime and Weekend Inspections

Maricopa County Measure 7 commits to implement proactive and complaint inspections of nonpermitted and permitted sources during non-daylight hours and on weekends through a combination of an on-call system and shift work. The County commits to begin conducting random and after hours inspections in January through June 2008. The after hours, weekend and on-call inspections are scheduled to begin in June - September 2008.

This measure is expected to increase compliance with Rule 310 and Rule 316 by four percent in 2008, six percent in 2009 and eight percent in 2010. The increased inspections on nights and weekends are projected to increase compliance with Rule 310.01 for vacant lots by one percent and decrease unpaved parking area emissions by two percent in 2008-2010.

The benefits for construction, non-metallic mineral processing, vacant lots and unpaved parking areas are decreased by 25 percent in 2008 to account for the implementation of random and after hours inspections in January 2008, following by implementation of the after hours, weekend and on-call inspections in June 2008. The total reductions associated with increases in compliance with Rule 310, Rule 316 and Rule 310.01 and the decreases in unpaved parking lot emissions are shown below.

	2008	2009	2010
Reductions due to Measure #8 (tons/year)	1,884	3,678	4,848
% reduction in total 2007 PM-10 emissions	1.9%	3.8%	5.0%

Measure #9 - Increase Consistent Inspection Frequency for Permitted Facilities; Measure #10 - Increase Number of Proactive Consistent Inspections in Areas of Highest PM-10 Emissions Densities; and Measure #44 - Maricopa County Should Increase Enforcement in the Areas Where PM-10 Violations Continue to Occur, Along With Efforts Throughout the Region

The commitment to implement Measures #9, #10 and #44 is contained in Maricopa County Measure 8. In Table 7-1, these three measures are referred to collectively as: Increase the Number of Proactive Rule 310 and Rule 316 Inspections. To increase enforcement, the County has committed to hire 47 additional dust control compliance personnel to

inspect construction sites and 5 additional compliance inspectors to inspect other permitted facilities. These new staff are scheduled to be hired and begin proactive inspections by June 2008.

It is anticipated that the additional compliance personnel will aggressively enforce Rule 310 which will result in increases in Rule 310 compliance of four percent in 2008, six percent in 2009, and eight percent in 2010. In addition, the proactive enforcement of Rule 316 is expected to increase compliance with Rule 316 by three percent in 2008, six percent in 2009, and nine percent in 2010. The benefits for Rule 310 and Rule 316 are reduced by 50 percent in 2008 to account for the implementation date of June 2008. The total emissions reductions due to this measure are:

	2008	2009	2010
Reductions due to Measures #9, #10 and #44 (tons/year)	1,153	3,488	4,673
% reduction in total 2007 PM-10 emissions	1.2%	3.6%	4.8%

Measure #21 - Ban Leaf Blowers from Blowing Debris into Streets

SB 1552 requires that cities, towns and counties in Area A develop and enforce ordinances to ban blowing of landscape debris into public streets at any time by any person. The ordinances are to be adopted and enforced by March 31, 2008. Assuming that 10 percent of the emissions from leaf blowers are blown into the streets and compliance with the ban will be 20 percent, this measure will effect the following reductions in PM-10 emissions.

	2008	2009	2010
Reductions due to Measure #21 (tons/year)	14	19	19
% reduction in total 2007 PM-10 emissions	0.01%	0.02%	0.02%

Measure #22 - Implement a Leaf Blower Outreach Program

SB 1552 requires educational materials to be prepared by the Arizona Department of Environmental Quality (ADEQ) and provided to buyers or renters of leaf blowing equipment by September 19, 2007. In addition, SB 1552 requires persons operating leaf blowers for remuneration to attend ADEQ approved training once every 3 years. The implementation date for the training is December 31, 2008. It is assumed that these requirements together will reduce annual leaf blower emissions by 0.1 percent. Credit for this measure is taken after leaf blower emissions were reduced by Measures #21 and #45. Since the training component of this measure will produce the major benefit, no emissions reduction credit is taken until 2009.

Reductions due to Measure #22 (tons/year)
 % reduction in total 2007 PM-10 emissions

2009	2010
1	1
0.001%	0.001%

Measure #23 - Ban ATV Use on High Pollution Days

SB 1552 prohibits operation of off-road vehicles on unpaved surfaces during high pollution advisory (HPA) days forecasted by ADEQ for particulate matter. This ban applies to Area A and is to be implemented by ADEQ by September 19, 2007. Historically, there have been about 20 HPA days for particulate matter each year. It is assumed that there would be a 20 percent compliance rate with the ban on ATV use on the HPA days. Credit for Measure #23 is applied to the base case off-road recreational vehicle emissions.

Reductions due to Measure #23 (tons/year)
 % reduction in total 2007 PM-10 emissions

2008	2009	2010
26	26	27
0.03%	0.03%	0.03%

Measure #25 - Pave or Stabilize Existing Unpaved Parking Lots

There are commitments to pave or stabilize unpaved parking lots from three different sources. These are described separately as sub-measures (1), (2) and (3) below.

(1) Maricopa County submitted a commitment (Maricopa County Measure 17) to conduct proactive and complaint-based inspections of existing parking lots located within unincorporated areas of Maricopa County and commence enforcement as necessary to require dustproof paving methods. The County has committed to hire 4 inspectors by June 2008 to conduct inspections of unpaved parking lots. Proactive inspections of existing high volume use unpaved parking areas in unincorporated areas are scheduled to begin by October 1, 2008. This Maricopa County commitment is expected to decrease parking lot emissions in the nonattainment area by two percent after the implementation of proactive inspections on October 1, 2008. The two percent reduction is applied to the base case unpaved parking lot emissions.

(2) SB 1552 has two requirements for cities and towns in Area A to pave or stabilize unpaved parking lots. New or revised codes or ordinances to pave or stabilize parking areas are required by March 31, 2008. Implementation of the codes or ordinances is required by October 1, 2008 for all parking areas except those for residential buildings with less than five units. Implementation of the codes or ordinances is required by October 1, 2009 for residential buildings with less than five units and parking areas of 3,000 square feet or more.

Implementation of SB 1552 is expected to reduce PM-10 emissions from unpaved parking

areas by five percent after October 1, 2008 and ten percent after October 1, 2009. The percentage reductions are applied to the unpaved parking lot emissions after credit is taken for sub-measure (1) and Measure #8 - Conduct Nighttime and Weekend Inspections.

(3) Two municipalities submitted commitments that have been quantified for Measure #25. The Town of Paradise Valley committed to require dustproofing of five commercial dirt parking lots within two years. The City of Chandler committed to pave or stabilize 100 acres of City parking lots in FY 2008-2010.

The total reduction in PM-10 emissions due to Measure #25 is the sum of the reductions from the sub-measures described in (1), (2) and (3) above.

	2008	2009	2010
Total Reductions due to Measure #25 (tons/year)	56	294	419
% reduction in total 2007 PM-10 emissions	0.1%	0.3%	0.4%

Measure #28 - Pave or Stabilize Unpaved Shoulders

Maricopa County and twelve cities and towns committed to stabilize and pave unpaved shoulders in the PM-10 nonattainment area. The cumulative miles of unpaved shoulders to be paved or stabilized are summarized by year in the table below:

Linear Miles of Unpaved Shoulders (Cumulative)				
Type of Treatment	2007	2008	2009	2010
Total Paved	19.2	50.7	87.0	109.7
Total Stabilized	192.0	222.0	164.0	197.5
Total Paved and Stabilized	211.2	272.7	251.0	307.2

In addition, SB 1552 requires cities, towns, and counties in Area A to develop and implement plans to stabilize unpaved shoulders on targeted arterials. The plans are to give priority to shoulders with evident or anticipated vehicle use and must be developed and implemented by January 1, 2008.

Ten jurisdictions have committed to stabilize 198 miles of unpaved shoulders by 2010. It is reasonable to assume that the SB 1552 plans to address stabilization and paving of unpaved shoulders will result in an at least 30 additional miles of shoulders being treated with dust suppressants each year. Since the plans must be implemented by January 1, 2008, the credit for stabilizing 30 miles of unpaved shoulders begins in 2008.

The plans are also expected to result in the paving of 15 linear miles of shoulders by December 31, 2008, with another 15 miles to be paved by December 31, 2009. This is a conservative assumption, given that 4 jurisdictions committed to pave 110 miles of shoulders by 2010.

The total reduction in PM-10 emissions due to Measure #28 is the sum of the reductions due to the commitments by the thirteen jurisdictions and the additional SB 1552 requirement to implement plans to stabilize unpaved shoulders. The 2007 reductions are applied to the base case paved road emissions in 2007.

	2007	2008	2009	2010
Reductions due to Measure #28 (tons/year)	381	651	706	889
% reduction in total 2007 PM-10 emissions	0.4%	0.7%	0.7%	0.9%

Measure #30 - Strengthen and Increase Enforcement of Rule 310.01 for Vacant Lots

SB 1552 requires counties in the PM-10 nonattainment area to adopt rules to stabilize disturbed surfaces of vacant lots by March 31, 2008 and begin enforcement by October 1, 2008. This measure is expected to increase the base compliance rate with Rule 310.01 for vacant lots by five percent, from 68 percent to 73 percent. The base compliance level of 68 percent was obtained from a rule effectiveness study conducted by MCAQD and documented in the 2005 Periodic Emissions Inventory for PM-10. The reduction in emissions due to this increase in enforcement is shown below.

	2008	2009	2010
Reductions due to Measure #30 (tons/year)	156	622	622
% reduction in total 2007 PM-10 emissions	0.2%	0.6%	0.6%

Measure #31 - Restrict Vehicular Use and Parking on Vacant Lots and Measure #32 - Enhanced Enforcement of Trespass Ordinances and Codes

SB 1552 requires cities, towns and counties in the PM-10 nonattainment area to adopt or amend codes/ordinances to restrict vehicle parking and use on unpaved or unstabilized vacant lots by March 31, 2008. In support of Measure #31, Maricopa County Measure 22 commits to adopt ordinance(s) to restrict vehicular use and parking on vacant lots. In support of Measure #32, Maricopa County has also committed to coordinate with the Maricopa County Sheriff's Office to conduct enforcement initiatives which will involve enforcement of ordinances and rules to prevent and discourage vehicle trespass on vacant lots. The County will prioritize the initiatives based on complaints and in areas with high trespass activity.

It is assumed that the enforcement of the strengthened codes/ordinances by Maricopa County and the cities and towns will reduce the emissions from unstabilized lots in the PM-10 nonattainment area by five percent after March 31, 2008 and ten percent in 2009 and 2010. The calculation of the benefit for Measures #31 and #32 assumes that Measures #8, #30 and #33 are already implemented.

The total PM-10 emissions reductions attributable to Measures #31 and #32 are shown below.

	2008	2009	2010
Reductions due to Measures #31 & #32 (tons/year)	198	459	459
% reduction in total 2007 PM-10 emissions	0.2%	0.5%	0.5%

Measure #33 - Recover Costs of Stabilizing Vacant Lots

SB 1552 authorizes counties in the PM-10 nonattainment area to stabilize the disturbed surface area of vacant lots at the expense of the owner after written notification beginning on October 1, 2008. It is assumed that the ability to recover the cost of stabilization from the land owner will increase compliance with Rule 310.01 for vacant lots by two percent from 73 to 75 percent. This increase in compliance is added to the five percent increase in compliance due to Measure #30. The benefit of this measure is reduced by 75 percent in 2008 to reflect the implementation date of October 1, 2008.

	2008	2009	2010
Reductions due to Measure #33 (tons/year)	62	249	249
% reduction in total 2007 PM-10 emissions	0.1%	0.3%	0.3%

Measure #34 - Increase Fines for Open Burning

SB 1552 requires ADEQ to increase the fine for the first violation for open burning from \$25 to \$500 in the State of Arizona. SB 1552 also requires counties in Area A to increase the fine for the fourth and subsequent violations of the no burn ordinances from \$100 to \$250. These increased fines are to go into effect by September 19, 2007. It is expected that the increased penalties will reduce open burning emissions in the PM-10 nonattainment area by five percent. This reduction was applied to the base case open burning emissions obtained from the 2005 Periodic Emissions Inventory for PM-10. The PM-10 emissions reductions are shown below.

	2008	2009	2010
Reductions due to Measure #34 (tons/year)	1	1	1
% reduction in total 2007 PM-10 emissions	0.001%	0.001%	0.001%

Measure #35 - Restrict Use of Outdoor Fireplaces and Pits and Ambience Fireplaces in the Hospitality Industry

SB 1552 requires Maricopa County to prohibit by ordinance chimineas and outdoor fires on

No Burn Days. This ban is to be implemented by September 19, 2007. During the deliberations on SB 1552, ADEQ provided the legislature with an annual benefit estimate for this measure of 12 tons of PM-10 emissions reduced in the PM-10 nonattainment area.

	2008	2009	2010
Reductions due to Measure #35 (tons/year)	12	12	12
% reduction in total 2007 PM-10 emissions	0.01%	0.01%	0.01%

Measure #36 - Require Barriers in Addition to Rule 310 Stabilization Requirements for Construction Where All Activity Has Ceased, Except for Sites in Compliance with Storm Water Permits; Measure #37 -Reduce the Tolerance of Trackout to 25 Feet Before Immediate Cleanup is Required for Construction Sites be Placed in Maricopa County Rule 310; and Measure #38 - No Visible Emissions Across the Property Line be Placed in Maricopa County Rule 310 and 310.01, and in Local Ordinances for Nonpermitted Sources as Appropriate.

Since these three measures are addressed under Maricopa County Measure 3, the emissions reduction benefits have been quantified together. In Table 7-1, these three measures are referred collectively as Strengthen Rule 310 to Promote Continuous Compliance. It is anticipated that the strengthening of the dust control requirements in Rule 310 will increase compliance by preventing the generation of dust, so that there are fewer incidences of trackout or visible plumes that cause elevated PM-10 concentrations. In the Maricopa County commitment, the rule changes are scheduled to be implemented by March 2008. Due to the implementation of this measure, compliance with Rule 310 is expected to increase by one percent in 2008 and two percent in 2009 and 2010. The benefit of this measure has been decreased by 25 percent in 2008 to reflect the March 2008 implementation date of the rule revisions.

	2008	2009	2010
Reductions due to Measures #36, #37, #38 (tons/year)	423	1,129	1,129
% reduction in total 2007 PM-10 emissions	0.4%	1.2%	1.2%

Measure #45 - Prohibit Use of Leaf Blowers on Unstabilized Surfaces

SB 1552 requires counties in Area A to develop and enforce ordinances to prohibit any person from using a leaf blower on unstabilized surfaces by March 31, 2008. It is assumed that 50 percent of leaf blowing currently occurs on unstabilized surfaces and compliance with the ban would be 20 percent. This credit is applied to the net leaf blower emissions after implementation of Measure #21. The benefit in 2008 is decreased by 25 percent in 2008 to reflect the implementation date of March 21, 2008. The benefit of this measure is shown below.

	2008	2009	2010
Reduction due to Measure #45 (tons/year)	68	92	95
% reduction in total 2007 PM-10 emissions	0.1%	0.1%	0.1%

Measure #47 - Ban Open Burning During the Ozone Season and Measure #48 - Require Residential Woodburning Ordinances to Include No Burn Restrictions on High Pollution Advisory Days

SB 1552 requires ADEQ to ban outdoor fires in Area A from May 1 through September 30, effective September 19, 2007. During the deliberations on SB 1552, ADEQ provided the legislature with an annual benefit estimate of 6 tons of PM-10 reduced for Measure #47.

In addition, SB 1552 requires counties in Area A to include no burn restrictions on high pollution advisory days that ADEQ forecasts for particulate matter (PM). The latter requirement is to go into effect by October 31, 2007. ADEQ provided the legislature with an annual benefit for this measure of 23 tons of PM-10 reduced for Measure #48.

The PM-10 emissions reductions for Measures #47 and #48 are shown below.

Measure #47 - Ban on outdoor fires May through Sept
Measure #48 - No burn restrictions on HPA days for PM
Total reductions due to Measures #47 & #48 (tons/year)
% reduction in total 2007 PM-10 emissions

2008	2009	2010
6	6	6
23	23	23
29	29	29
0.03%	0.03%	0.03%

Measure #53 - Repave or Overlay Paved Roads with Rubberized Asphalt

The Arizona Department of Transportation (ADOT) has committed to implement Phase X of the Quiet Pavement Program by March 2008. This phase of the program will overlay 2.43 miles of I-10 and 2.78 miles of State Route 143 with rubberized asphalt. ADOT provided the PM-10 emissions reduction of 0.034 tons/lane mile/year for facilities carrying 17,000 vehicles per lane. This emissions reduction is based on research studies conducted by ADOT on the impact of rubberized asphalt pavement on PM-10 emissions. The reduction in PM-10 emissions due to Measure #53 is shown below.

Reductions due to Measure #53 (tons/year)
% reduction in total 2007 PM-10 emissions

2008	2009	2010
1	1	1
0.001%	0.001%	0.001%

DEMONSTRATION THAT THE MEASURES MEET THE FIVE PERCENT REQUIREMENT

The twenty-five committed measures described in this chapter have been quantified to meet the five percent reduction requirement in Section 189(d) of the Clean Air Act. The PM-10 emissions reductions for these measures are summarized in Table 7-1.

Table 7-2 shows the base case PM-10 emissions for 2007-2010. The methods and assumptions used in deriving the 2007-2010 base case emissions from the 2005 Periodic Emissions Inventory for PM-10 are described in Chapter II of the TSD.

Table 7-3 presents the controlled PM-10 emissions for 2007-2010. These are the emissions after the reductions from the twenty-five quantified control measures in Table 7-1 have been applied to the base case emissions in Table 7-2.

The annual five percent reduction target is obtained by multiplying the controlled 2007 PM-10 emissions in Table 7-3 by five percent, which results in 4,872 tons. To meet this annual reduction target, the controlled 2008 emissions must be at least 4,872 tons less than the base case 2008 emissions; the controlled 2009 emissions must be at least 9,744 tons less than the 2009 base case emissions; and the controlled 2010 emissions must be at least 14,616 tons less than the 2010 base case emissions.

The 2010 emissions reductions by control measure are shown in Figure 7-1 (tons reduced) and Figure 7-2 (percent reductions). Figures 7-3 and 7-4 illustrate the distribution of PM-10 emissions by source category in 2007 and 2010, based on the controlled emissions in Table 7-3.

A comparison of the reductions in Table 7-1 with the five percent targets is provided in Table 7-4. This table confirms that the five percent reduction targets are met in 2008, 2009 and 2010. In each year there is a surplus margin of benefit. This surplus benefit is needed to model attainment at all monitors in the nonattainment area, as expeditiously as practicable, which is 2010. The modeling attainment demonstration is discussed in the next chapter.

Table 7-1. Summary of PM-10 Emissions Reductions for Committed Control Measures

Measure # - Title	PM-10 Reductions (tons/year)		
	2008	2009	2010
M2 - Extensive dust control training program	565	1,694	2,258
M3/16 - Dust managers/coordinators at earthmoving sites \geq 5 acres	1,307	2,923	4,109
M9/10/44 - Increase proactive Rule 310 and 316 inspections	1,153	3,488	4,673
M36-38 - Strengthen Rule 310 to promote continuous compliance	424	1,129	1,129
M8 - Conduct nighttime and weekend inspections	1,884	3,678	4,848
M21 - Ban leaf blowers from blowing debris into streets	14	19	19
M45 - Prohibit use of leaf blowers on unstabilized surfaces	68	92	95
M22 - Implement a leaf blower outreach program		1	1
M23 - Ban ATV use on high pollution days	26	26	27
M25 - Pave or stabilize existing unpaved parking lots	56	294	419
M28 - Pave or stabilize unpaved shoulders	651	706	889
M30 - Strengthen and increase enforcement of Rule 310.01 for vacant lots	156	622	622
M33 - Recover costs of stabilizing vacant lots	62	249	249
M31/32 - Restrict and enforce vehicle use/parking on vacant lots	198	459	459
M34 - Increase fines for open burning	1	1	1
M35 - Restrict use of outdoor fireplaces/pits/ambiance fireplaces	12	12	12
M47/48 - Other wood burning restrictions in SB 1552	29	29	29
M53 - Repave or overlay paved roads with rubberized asphalt	1	1	1
Total PM-10 Emissions Reductions for Committed Control Measures	6,605	15,423	19,840
Five Percent Reduction Target (tons/year)	4,872	9,744	14,616

Table 7-2. 2007- 2010 Base Case PM-10 Emissions in the PM-10 Nonattainment Area (tons/year)

Source Categories	2007	% of total	2008	% of total	2009	% of total	2010	% of total
Stationary point sources	1,792	1.8%	1,870	1.9%	1,948	1.9%	2,026	2.0%
Industrial processes	3,533	3.6%	3,686	3.7%	3,840	3.8%	3,993	3.9%
Fuel combustion & fires	5,665	5.7%	5,685	5.7%	5,705	5.6%	5,726	5.6%
Agriculture	3,559	3.6%	3,416	3.4%	3,281	3.2%	3,152	3.1%
Construction (residential)	11,783	11.9%	11,783	11.8%	11,783	11.6%	11,783	11.5%
Construction (commercial)	12,030	12.2%	12,030	12.0%	12,030	11.9%	12,030	11.7%
Construction (road)	6,659	6.8%	6,659	6.7%	6,659	6.6%	6,659	6.5%
Other land clearing	3,467	3.5%	3,467	3.5%	3,467	3.4%	3,467	3.4%
Travel on unpaved parking lots	3,184	3.2%	3,272	3.3%	3,359	3.3%	3,447	3.4%
Offroad rec vehicles	2,285	2.3%	2,347	2.3%	2,410	2.4%	2,473	2.4%
Leaf blowers fugitive dust	892	0.9%	917	0.9%	941	0.9%	966	0.9%
Windblown vacant	5,580	5.7%	5,580	5.6%	5,580	5.5%	5,580	5.4%
Windblown other	495	0.5%	495	0.5%	495	0.5%	495	0.5%
Nonroad equipment	1,937	2.0%	1,913	1.9%	1,894	1.9%	1,879	1.8%
Exhaust/tire wear/brake wear	1,719	1.7%	1,668	1.7%	1,587	1.6%	1,537	1.5%
Paved roads (including trackout)	16,754	17.0%	17,669	17.7%	18,608	18.4%	19,608	19.1%
Unpaved roads	17,312	17.5%	17,489	17.5%	17,667	17.4%	17,848	17.4%
Total PM-10 Emissions	98,646	100.0%	99,946	100.0%	101,255	100.0%	102,668	100.0%

Table 7-3. 2007- 2010 PM-10 Emissions with Committed Control Measures (tons/year)

Source Categories	2007	% of total	2008	% of total	2009	% of total	2010	% of total
Stationary point sources	1,792	1.8%	1,841	2.0%	1,867	2.2%	1,904	2.3%
Industrial processes	3,533	3.6%	3,607	3.9%	3,619	4.2%	3,662	4.4%
Fuel combustion & fires	5,665	5.8%	5,643	6.0%	5,663	6.6%	5,683	6.9%
Agriculture	3,559	3.7%	3,416	3.7%	3,281	3.8%	3,152	3.8%
Construction (residential)	11,783	12.1%	10,019	10.7%	7,471	8.7%	6,098	7.4%
Construction (commercial)	12,030	12.3%	10,229	11.0%	7,627	8.9%	6,226	7.5%
Construction (road)	6,659	6.8%	5,662	6.1%	4,222	4.9%	3,446	4.2%
Other land clearing	3,467	3.6%	2,948	3.2%	2,198	2.6%	1,795	2.2%
Travel on unpaved parking lots	3,184	3.3%	3,166	3.4%	3,000	3.5%	2,961	3.6%
Offroad recreational vehicles	2,234	2.3%	2,322	2.5%	2,384	2.8%	2,446	3.0%
Leaf blowers fugitive dust	892	0.9%	835	0.9%	829	1.0%	851	1.0%
Windblown vacant	5,580	5.7%	5,071	5.4%	4,127	4.8%	4,127	5.0%
Windblown other	495	0.5%	495	0.5%	495	0.6%	495	0.6%
Nonroad equipment	1,937	2.0%	1,913	2.0%	1,894	2.2%	1,879	2.3%
Exhaust/tire wear/brake wear	1,719	1.8%	1,668	1.8%	1,587	1.8%	1,537	1.9%
Paved roads (including trackout)	16,373	16.8%	17,018	18.2%	17,901	20.9%	18,718	22.6%
Unpaved roads	16,533	17.0%	17,489	18.7%	17,667	20.6%	17,848	21.5%
Total PM-10 Emissions	97,436	100.0%	93,341	100.0%	85,832	100.0%	82,829	100.0%

Figure 7-1
Reductions in 2010 for Committed Control Measures
in the Five Percent Plan for PM-10

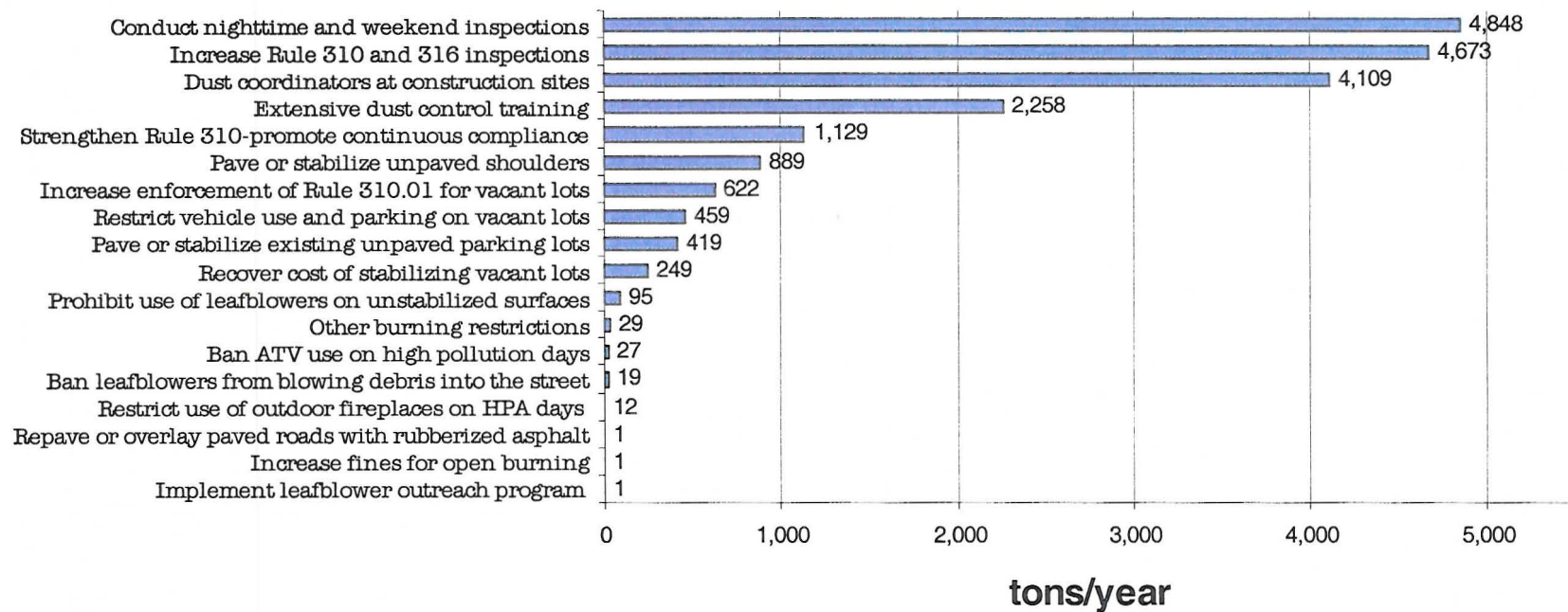


Figure 7-2
Percent Reductions in 2010 for Committed Control Measures
in the Five Percent Plan for PM-10

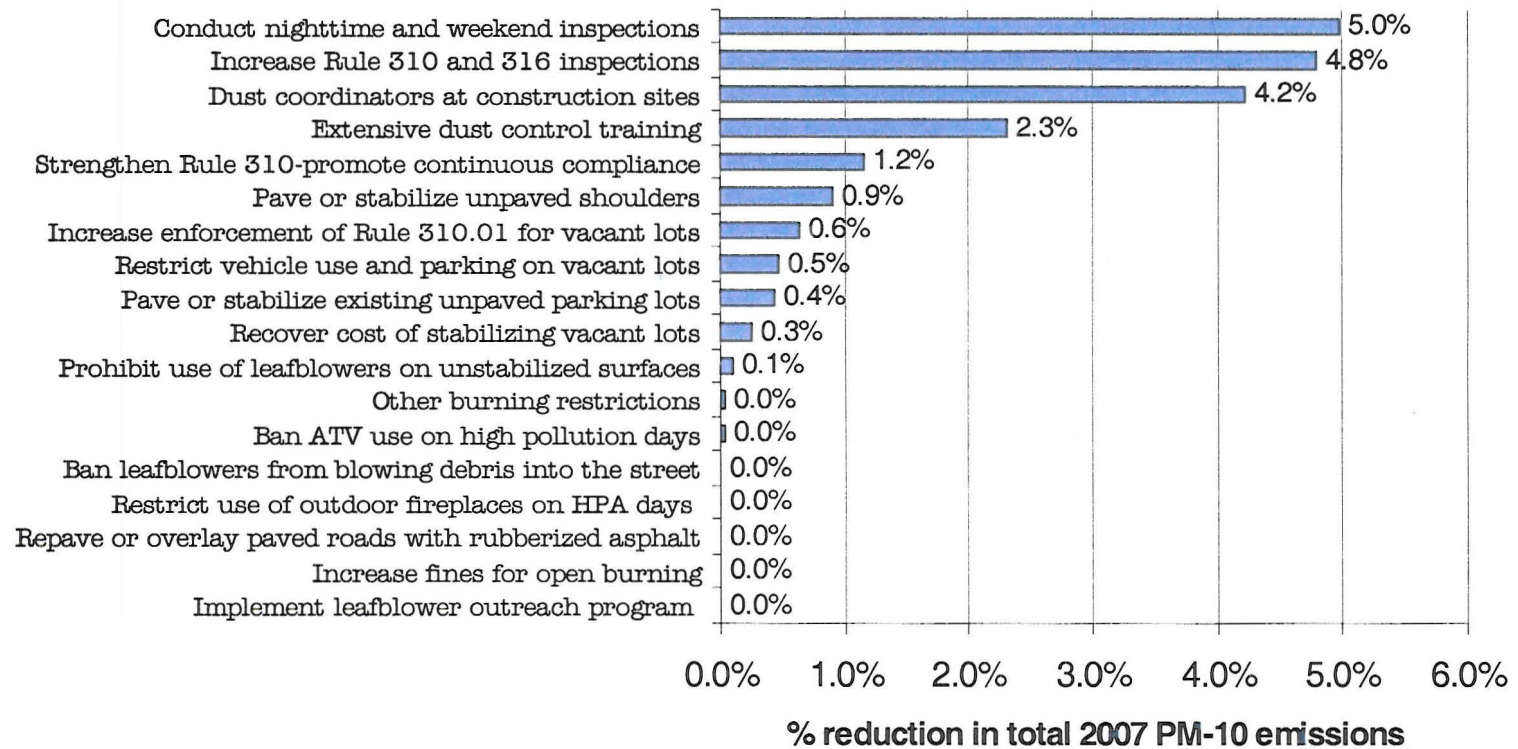


Figure 7-3
2007 PM-10 Emissions
with Committed Control Measures
Total = 97,436 tons/year

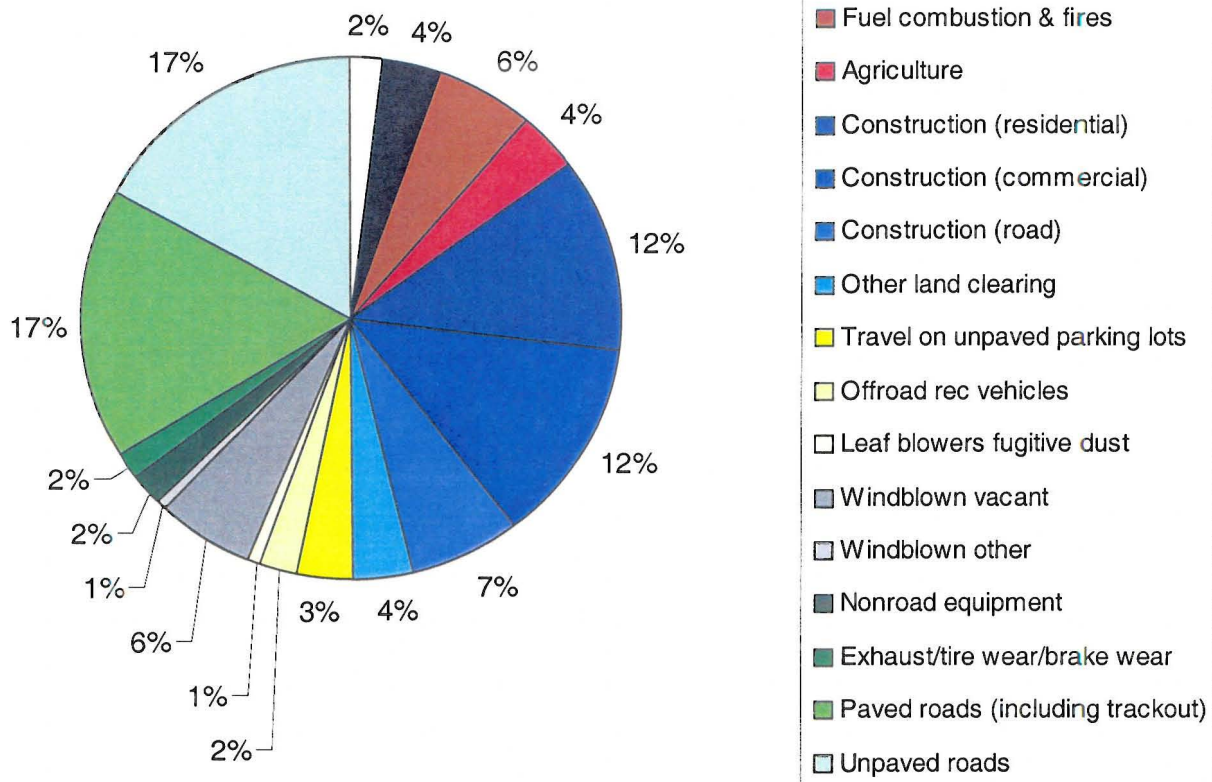


Figure 7-4
2010 PM-10 Emissions
with Committed Control Measures
Total = 82,829 tons/year
(19.3% reduction)

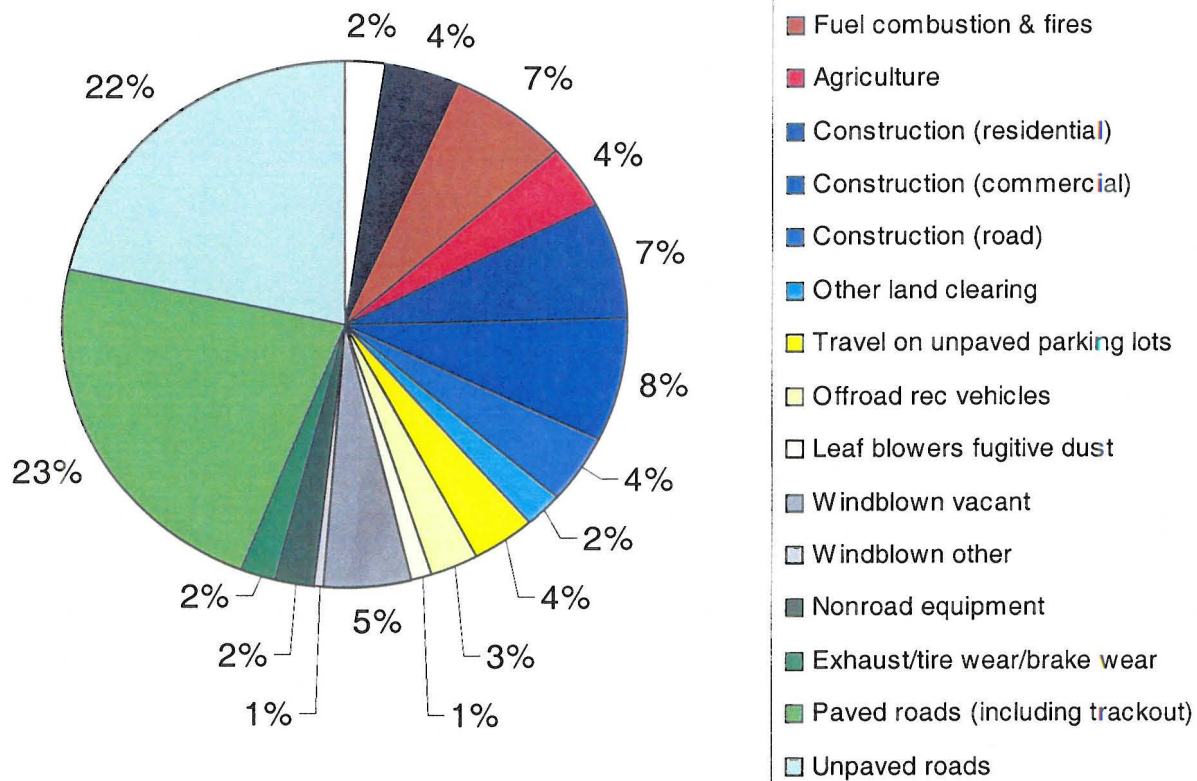


Table 7-4. PM-10 Emissions Reductions and Five Percent Reduction Targets

Year	5% Reduction Target (tons/year)	Total PM-10 Emissions Reductions for Committed Control Measures (tons/year)	Excess Benefit	
			(tons/year)	%
2008	4,872	6,605	1,733	35.6%
2009	9,744	15,423	5,679	58.3%
2010	14,616	19,840	5,224	35.7%

CHAPTER EIGHT

ATTAINMENT DEMONSTRATION

Chapter Eight describes the modeling that was performed to demonstrate that attainment of the 24-hour PM-10 standard will be achieved by December 31, 2010. The modeling was conducted for the two areas that have the mix and density of sources that caused the highest 24-hour PM-10 monitor readings in the PM-10 nonattainment area during the last three years (2004-2006). A modeling attainment demonstration was performed for a 29 square mile area in the Salt River Area, which includes the only three monitors in the PM-10 nonattainment area that violated the PM-10 standard in 2004-2006. Modeling for the Salt River Area was performed for two different episodes, one representing stagnant conditions and a second, for high wind conditions.

Modeling was also performed for a 16 square kilometer area surrounding the Higley PM-10 monitor. The Higley monitor did not violate the PM-10 standard in 2004-2006, but had one exceedance in 2004 and one in 2006. The area surrounding the Higley monitor has a different mix of sources contributing to high PM-10 levels than in the Salt River Area.

An attainment demonstration for the remainder of the nonattainment area is also provided in this chapter. This modeling demonstration is based on a simplified rollback approach using monitored data, estimates of onroad mobile sources emissions, findings from the Salt River Area modeling, and benefits from the committed control measures described in Chapter Seven.

In addition to the modeling attainment demonstrations, this chapter addresses other requirements of a nonattainment area plan, including reasonable further progress, contingency measures, and the onroad motor vehicle emissions budget for conformity. The chapter concludes with a discussion of the committed control measures in the Five Percent Plan that will reduce PM-10 emissions sufficiently to achieve attainment as expeditiously as practicable.

SALT RIVER AREA MODELING

This section describes the modeling and results for the attainment demonstration in the Salt River Area. A detailed discussion of the technical methods and assumptions used to perform the modeling for the Salt River Area is provided in Chapter V of the TSD.

In light of the numerous exceedances of the PM-10 standard that occurred under stagnant conditions in 2005 and 2006, MAG determined that additional information would be needed to prepare an attainment demonstration for the Five Percent Plan. This led to an intensive field study in the Salt River Area during November/December of 2006 entitled "PM-10 Source Attribution and Deposition Study." While the report documenting the study has not been completed, the results, which include the insights outlined below, have been incorporated into this modeling analysis.

- *Transport* – Vehicles equipped with PM-10 monitors were used to collect measurements of PM-10 concentrations throughout the Salt River Area. Measurements collected at the boundaries provided insight into possible contributions from upwind transport.
- *Improved Meteorology* – Discussions with Maricopa County led to the collection of wind speed and wind direction measures at five-minute intervals instead of on an hourly basis. This information was used to prepare a back trajectory analysis of wind currents and provide additional insight into the role of transport. A mini SODA unit was installed at the West 34th monitoring site and used to collect data that could be used to interpret mixing heights on days when the ambient PM-10 standard was exceeded.
- *Traffic Counts* – Measurements of traffic volumes were collected on both arterial and local roads throughout the Salt River Area. The hourly measurements were used to quantify the diurnal distribution of travel activity on days when the ambient PM-10 standard was exceeded.
- *Particle Deposition* – Dust jars were sited in the vicinity of the Durango Complex and West 43rd Ave monitors to collect information the relative contribution of deposition to monitored concentrations.
- *Silt Measurements* – U.C. Riverside was retained to drive a vehicle equipped with PM-10 monitors to measure silt levels on roads throughout the Salt River Area. The measurements were used to determine the relative silt loadings on individual arterial roads.
- *Particle Size Distribution* – A vehicle was equipped with a PM monitor that provides measurements of particle size distribution. Measurements were collected in a variety of locations and used to assess source signatures and significance.
- *Field Observations* – Photographs and video recordings of source contributions and activity throughout the Salt River Area were collected. Activity data were collected for numerous locations to support the estimation of source emissions (e.g., unpaved parking activity, etc.). Contacts were also made with a variety of industry associations to collect data on activity levels during days when the ambient PM-10 standard was exceeded.

The data and insights described above were used to support the following analysis steps in this study:

- *Emission Inventory Preparation* – Existing emission inventories specific to the Salt River Area were refined. The existing emission inventories that served as the bases

for these refinements were the 2005 inventory¹ compiled by the Maricopa County Air Quality Department (MCAQD) and the 2002 inventory developed for modeling use in the TSD. Both of these inventories were comprehensive with respect to the spectrum of sources included and were current with respect to use of available data. In refining existing emission inventories, effort was focused on those source categories that produced the greatest impacts at the monitors as reported in the TSD. To improve the accuracy of modeling major area source category emissions, actual boundaries of individual area sources were used in the modeling input files rather than to uniformly distribute these *emissions over 400-meter square grid cells as had been done previously*.

- *Air Quality Modeling* – Based on a review of EPA guidelines, MAG determined that AERMOD was the most suitable dispersion model for evaluating hourly source contributions to PM-10 exceedances recorded at the Salt River monitors (i.e., Durango Complex and West 43rd Ave.). EPA adopted AERMOD as a regulatory model on December 9, 2005, as a replacement for ISCST3 (i.e., the model employed in the TSD). Compared with ISCST3, AERMOD contains improved algorithms for dealing with low wind speed (near calm) conditions. As a result, AERMOD can produce model estimates for conditions when the wind speed is less than 1 m/sec.^{2,3} This feature is of particular interest for stagnant conditions that characterize during winter months in the Salt River Area. Emission inventories and meteorological datasets representative of design day conditions were prepared and used to generate AERMOD runs. The results were combined with background concentrations to produce estimates of design day concentrations. These values were normalized to the actual design day values. The source-specific contributions (i.e., $\mu\text{g}/\text{m}^3$) were then forecast to 2010 to account for growth where applicable.
- *Control Measure Analysis* – MAG quantified the benefits of control measure commitments to demonstrate the annual five percent reduction in PM-10 emissions. That effort estimated average reductions for each measure throughout the entire nonattainment area. Using these estimates as a baseline, a separate analysis of the emission reductions attributable to these measures within the Salt River Area was prepared. Key issues considered in the Salt River analysis included local operating conditions, local silt measurements, differential implementation of control measures in areas with high emission densities, etc. The benefits for these measures were quantified in 2010 and applied to the source-specific contributions in that year.

¹ 2005 Periodic Emission Inventory for PM-10 for the Maricopa County, Arizona, Nonattainment Area, Maricopa County Air Quality Department, May 2007

² Revisions to the Guideline on Air Quality Models: Adoption of Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, U.S. Environmental Protection Agency, Federal Register, Vol. 70, No. 216, p. 68218, November 9, 2005 (Attachment IV)

³ User's Guide for AERMET, EPA-454/B-03-002, November 2004

- *Attainment Demonstration* – The source-specific estimates of $\mu\text{g}/\text{m}^3$ in 2010 were summed for each design day and monitor analyzed. The results were contrasted with the 24-hour PM-10 standard to demonstrate attainment.

Recognizing the difficulty agencies have had in accurately estimating emissions, control measure benefits, and conditions within the Salt River Area, this analysis has employed local measurements where possible. In those cases where local data are not available, conservative assumptions have been employed.

Design Day Selection

PM-10 monitors in the Maricopa County nonattainment area recorded 30 exceedances of the 24-hour average PM-10 national ambient air quality standard in both 2005 and 2006. Exceedances were recorded at six monitoring sites in the nonattainment area over the two-year period: Bethune Elementary, Durango Complex, Greenwood, Higley, West 43rd Avenue, and West Phoenix. The Buckeye monitor also exceeded the standard on five days in 2005-2006, but this monitor is outside the nonattainment area and therefore, was not modeled in this plan.

The stations recording the highest numbers of exceedances were Durango Complex, with 12 in 2005 and 11 in 2006; and West 43rd Avenue, with 13 in 2005 and 17 in 2006. A tabulation of the exceedance days and the 24-hour average concentrations recorded is presented in Tables 8-1 and 8-2 for 2005 and 2006, respectively. Because of the high exceedance frequencies, these two monitoring sites were selected for analysis.

The following primary criteria were applied in selecting the design days for PM-10 modeling:

- Days with high 24-hour PM-10 concentrations that are close to the design value for each monitor; and
- Availability of air quality, emission and meteorological data for the selected days and episode.

The Durango Complex and West 43rd Avenue monitors are located about two miles apart to the north and south, respectively, from the Salt River. These two monitors consistently record the highest PM-10 concentrations in the nonattainment area. The Durango and West 43rd monitors exceeded the 24-hour PM-10 standard on 23 and 30 days, respectively, in 2005 and 2006. Eighteen of the exceedances at the two monitors occurred on the same day. Most of the exceedances occurred during the fall and winter of 2005–2006 under low wind and severe inversion conditions.

Table 8-1
24-Hour Average NAAQS Exceedances Dates and Measured Concentrations
2005

Date	PM-10 Conc. ($\mu\text{g}/\text{m}^3$)	Date	PM-10 Conc. ($\mu\text{g}/\text{m}^3$)
Bethune Elementary Monitor		Greenwood Monitor	
December 12	198.0	December 12	172.7
Buckeye Monitor		West 43 rd Ave Monitor	
June 21	158.0	April 4	172.8
November 18	169.6	November 1	166.5
Durango Complex Monitor		November 2	174.0
November 3	163.8	November 10	166.2
November 17	156.2	November 22	173.4
November 22	189.6	November 23	175.5
November 23	165.0	December 2	195.2
December 1	158.8	December 12	233.0
December 2	165.0	December 13	167.7
December 12	206.8	December 14	177.1
December 13	166.0	December 21	200.6
December 14	181.2	December 22	168.3
December 15	156.4	December 23	156.6
December 21	200.3	West Phoenix Monitor	
December 22	179.1	December 12	155.0
December 23	157.5	-	-

Table 8-2
24-Hour Average NAAQS Exceedances Dates and Measured Concentrations
2006

Date	PM-10 Conc. ($\mu\text{g}/\text{m}^3$)	Date	PM-10 Conc. ($\mu\text{g}/\text{m}^3$)
Buckeye Monitor		West 43 rd Monitor	
February 13	159	January 10	190
February 14	272	January 11	165
February 17	192	January 12	169
Durango Complex Monitor		January 13	157
January 10	155	January 19	184
January 11	169	February 8	183
January 12	170	February 9	204
January 19	183	February 15	202
February 9	171	June 6	160
February 15	157	November 16	164
December 6	167	November 17	175
December 7	174	November 27	164
Higley Monitor		December 5	173
January 24	170	December 6	160
-	-	December 7	160
-	-	December 14	163
-	-	December 15	177

Note: In Tables 8-1 and 8-2, the selected design days and monitored values to be modeled with AERMOD are highlighted in bold italics.

The dates of December 11-13, 2005 were selected to be modeled with AERMOD to represent these stagnant conditions. On December 12, the West 43rd monitor recorded a 24-hour PM-10 concentration of 233 $\mu\text{g}/\text{m}^3$, the Durango Complex monitor reading was 207 $\mu\text{g}/\text{m}^3$, and the Bethune Elementary monitor measured 198 $\mu\text{g}/\text{m}^3$. On December 13, the West 43rd monitor reading was 167.7 $\mu\text{g}/\text{m}^3$ and the Durango Complex was 166.0 $\mu\text{g}/\text{m}^3$. December 11 has been included as a spin up day, since the severe meteorology of this episode appears to have started on that date.

On March 10, 2006, the highest PM-10 concentration at the West 43rd monitor was recorded, a value of 260 $\mu\text{g}/\text{m}^3$. This exceedance was caused by the prevalence of high winds for many hours; the average wind speed for this day was 9 mph. Durango and Greenwood also experienced exceedances on this day of 240 $\mu\text{g}/\text{m}^3$ and 166 $\mu\text{g}/\text{m}^3$, respectively. ADEQ, however, advised MAG that the PM-10 readings on this day have been flagged as a natural event due to high winds. Therefore, MAG determined that this day will not be modeled in the Five Percent Plan.

Other monitors that exceeded the PM-10 standard in 2005 and 2006 were Higley, Greenwood, and West Phoenix. During this period, the Higley monitor exceeded the 24-hour PM-10 standard once, on January 24, 2006. Windy conditions on January 24th caused disturbed vacant lands in the vicinity of the monitor to emit fugitive dust. To ensure that this monitor does not violate the PM-10 standard in the future, MAG determined that the area surrounding the Higley monitor should be modeled with rollback on this windy day.

During 2005 and 2006, the Greenwood and West Phoenix monitors exceeded the PM-10 standard on only one day, December 12, 2005. This is one of the stagnant days that is being modeled with AERMOD for the three monitors in the Salt River Area (i.e., Bethune Elementary, Durango Complex, and West 43rd Avenue). Rollback modeling has also been performed to demonstrate future attainment at these two monitors.

The highest 24-hour PM-10 value recorded under high wind conditions in the Salt River during 2005–2006 occurred on February 15, 2006, when West 43rd Avenue recorded a concentration of 202 $\mu\text{g}/\text{m}^3$ (this was after the value recorded on March 10, 2006 was flagged as a natural event). On that date, Durango recorded a value of 157 $\mu\text{g}/\text{m}^3$. The Salt River monitors that exceeded the standard on this windy day (i.e., Durango Complex and West 43rd Avenue) will also be modeled with AERMOD to demonstrate that these monitors will not exceed the PM-10 standard under similar meteorological conditions in the future.

In summary, the following design days, monitors, and models were selected for the Five Percent Plan:

- December 11-13, 2005 (low wind) – AERMOD (Bethune Elementary, Durango Complex, and West 43rd Avenue monitors);

- December 12, 2005 (low wind) – Rollback (Greenwood and West Phoenix monitors);
- January 24, 2006 (high wind) – Rollback (Higley monitor); and
- February 15, 2006 (high wind) – AERMOD (Durango Complex and West 43rd Avenue monitors).

On December 11-13, 2005, there were low wind days with significant inversion conditions. December 12 had the highest 24-hour PM-10 average concentration of 233 $\mu\text{g}/\text{m}^3$ at West 43rd Avenue, 207 $\mu\text{g}/\text{m}^3$ at Durango Complex, and 198 $\mu\text{g}/\text{m}^3$ at Bethune Elementary. The Greenwood and West Phoenix monitors also recorded exceedances on this day of 173 and 155 $\mu\text{g}/\text{m}^3$, respectively.

On January 24, 2006, only the Higley monitor experienced an exceedance, with a 24-hour concentration of 170 $\mu\text{g}/\text{m}^3$. Meteorological analysis indicated persistence of a few hours of high winds on this day.

On February 15, 2006, both the West 43rd and Durango Complex monitors experienced exceedances with 24-hour concentrations of 177 and 157 $\mu\text{g}/\text{m}^3$, respectively. No other monitors recorded exceedances on this date. Meteorological analysis confirmed that high winds were recorded at both sites during a 6-hour period on this day.

Plots of hourly PM-10 concentrations at the West 43rd Avenue and Durango Complex sites, together with hourly mixing height, recorded on December 12, 2005, are shown in Figures 8-1 and 8-2, respectively. Figure 8-1 shows that the average concentration for the Durango Complex at midnight exceeded 100 $\mu\text{g}/\text{m}^3$ and rose rapidly as anthropogenic activity increased during the morning hours. The peak morning concentration was recorded at 9 am. After that time, the sun angle was sufficient to produce enough ground warming to begin to elevate the mixing height. The concentrations dropped as the mixing height increased and more space was available for dispersion. In contrast to other low wind days, however, the hourly concentrations did not continue to fall as the mixing height increased. Instead, starting at 2 pm, while the mixing height was still increasing, the concentrations started to increase and remained elevated for the remainder of the day. One of the modeling challenges is identifying the underlying cause(s) of this behavior.

Another notable feature of Figure 8-1 is the strength and persistence of the inversion. The mixing height during the morning hours never exceeded 40 meters and the maximum height achieved during the day barely exceeded 150 meters. Once the ground heating stopped, the mixing height dropped rapidly and concentrations remained elevated during nighttime hours when anthropogenic activity was significantly reduced. The mean wind speed for the entire day averaged less than 1 mile per hour. Clearly, the meteorological conditions on this date were severe and conducive to the high concentrations recorded.

Figure 8-1
Summary of Monitoring Conditions at Durango Complex
on the Low Wind Design Day (December 12, 2005)

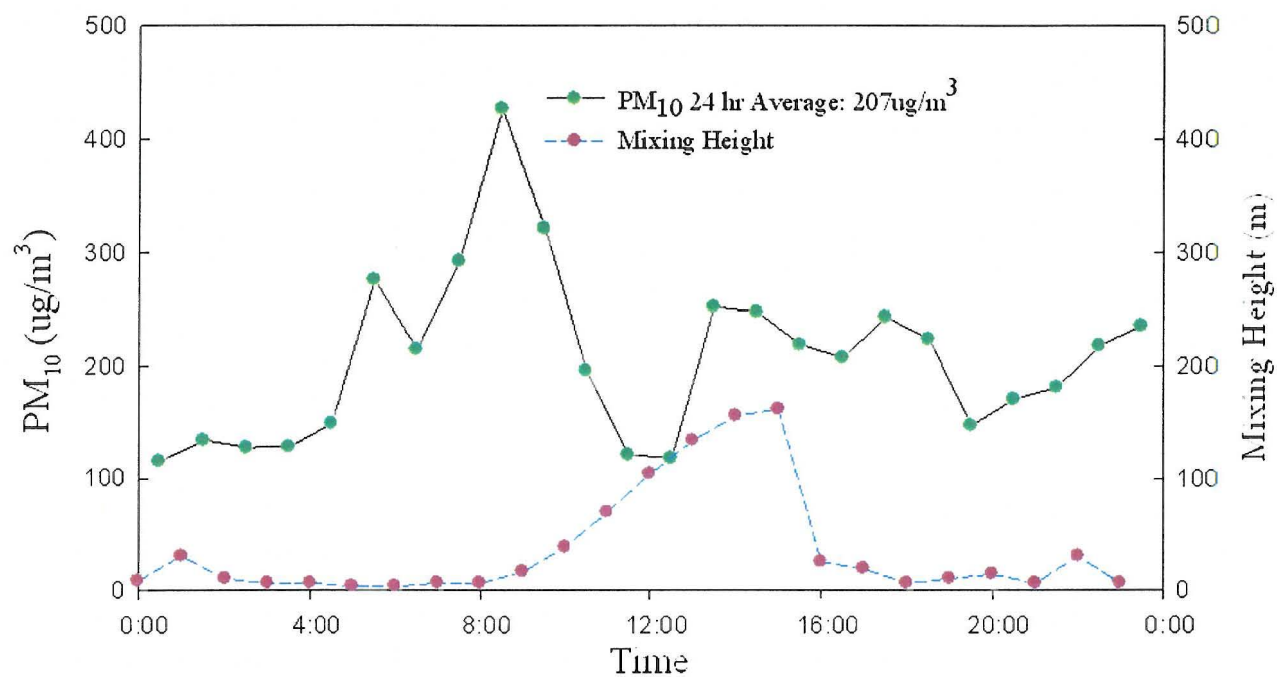
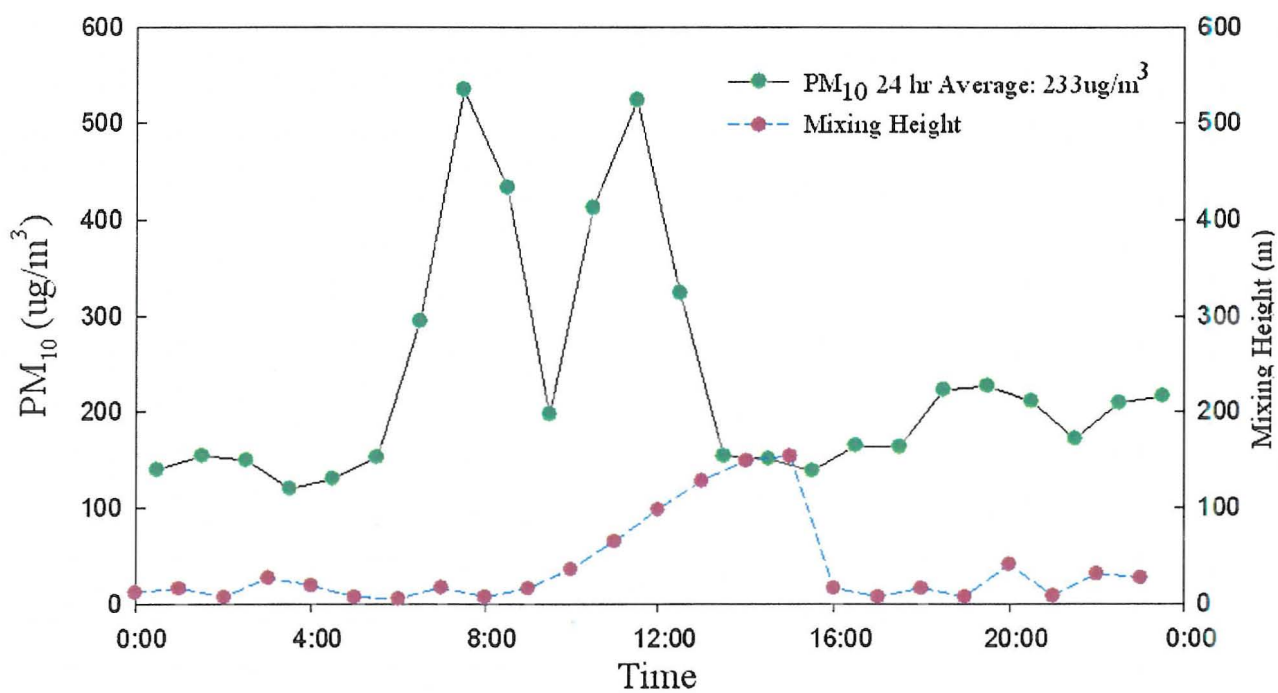


Figure 8-2
Summary of Monitoring Conditions at West 43rd Ave.
on the Low Wind Design Day (December 12, 2005)



While the mixing height profile at West 43rd tracks the Durango profile, there is a significant difference in the concentrations reported. The peak morning concentration occurs earlier (8 am versus 9 am), then declines for two hours and then increases at the same time the mixing height is rising. This “double hump” during the morning hours is unusual and suggests a localized “event” (i.e., diversion of traffic onto unpaved road shoulders next to the monitor, etc.). A check of the meteorological data shows that wind speeds during the morning hours were uniformly low as the average wind speed through 9 am was 1.2 miles per hour. Following the second peak, the concentrations declined and followed the pattern seen at the Durango Complex. Another modeling challenge will be providing insight into the cause of the morning profile at the West 43rd Avenue monitor.

In summary, the December 11-13 design episode was characterized by very low wind speeds that were typical of many of the 24-hour average PM-10 exceedances during the winter of 2005-2006. The lack of wind velocity needed to transport entrained particulate suggested that impacts at the monitoring sites were due to emissions of predominantly local sources. Early morning peaks at the monitors also suggested that morning paved road traffic might be a significant source driving the exceedance levels.

Figures 8-3 and 8-4 display hourly wind speed and concentrations recorded on the high wind day on February 15, 2006. Figure 8-3 shows that unlike low wind day, the morning concentrations at Durango remained uniformly low. This is surprising since the wind speeds averaged 2.2 mph from midnight through 9 am. The large increase in the concentrations recorded in the early afternoon tracks the increase in wind speeds, which exceed 15 mph at the peak, and then decline to 8 mph at the end of day. Figure 8-4 shows a similar pattern at the West 43rd Avenue monitor, except that the characteristic increase in morning concentrations seen under low wind conditions, which does not occur at the Durango Complex, does occur at West 43rd Avenue.

Figure 8-3
Summary of Monitoring Conditions at Durango Complex
on the High Wind Design Day
(February 15, 2006)

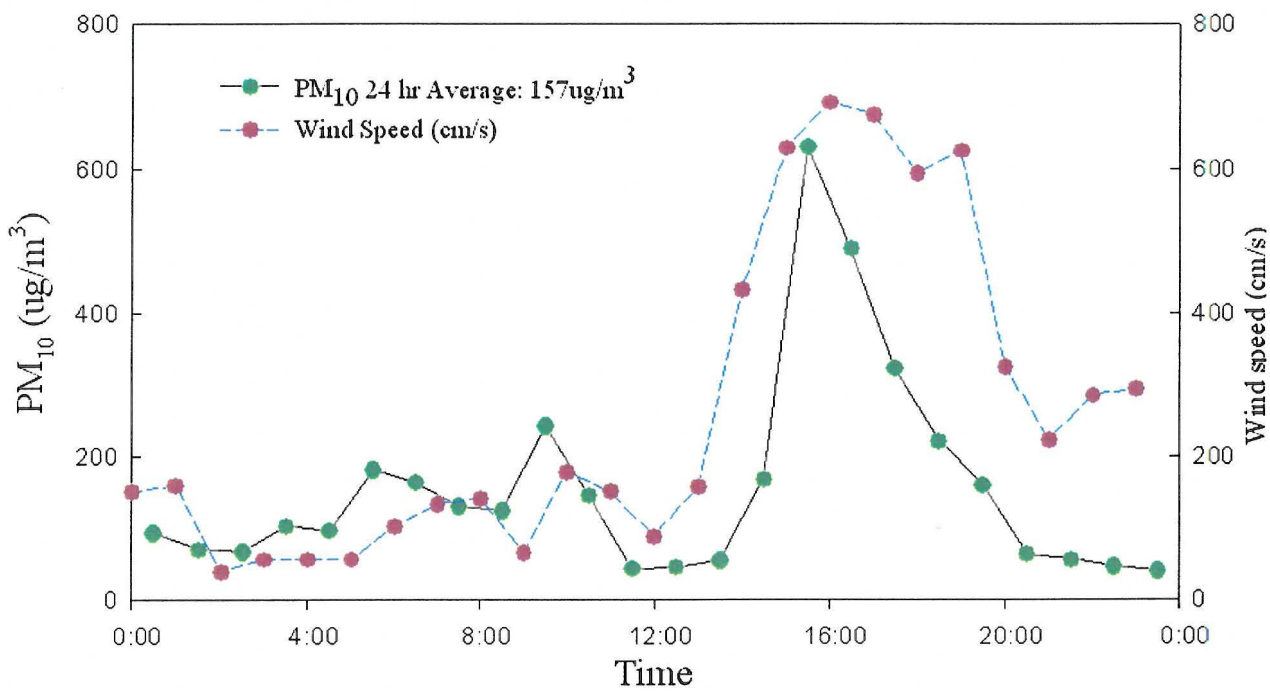
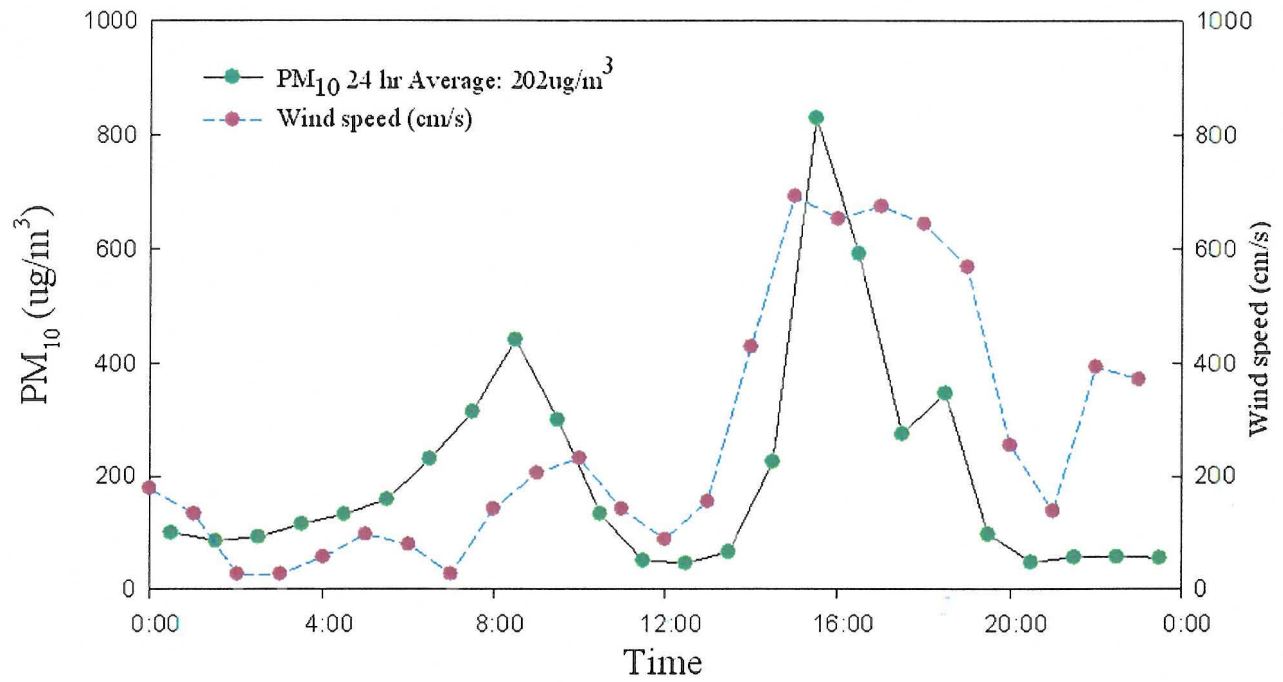


Figure 8-4
Summary of Monitoring Conditions at West 43rd Ave.
on the High Wind Design Day
(February 15, 2006)



Modeling Domain

The modeling domain for the West 43rd Avenue and the Durango Complex monitoring sites is shown in Figure 8-5. This is similar to the area initially defined in the ADEQ TSD for the 2005 PM-10 attainment plan and is bounded by Van Buren Street to the north, Baseline Road to the South, 59th Ave to the west and 7th Street to the east. Due to the diversity and number of PM-10 sources in the Salt River Area, it is considered to be a worst-case representation of sources throughout the nonattainment area. This area has the highest density of PM-10 emission in the nonattainment area. In addition, all major sources of PM-10 emissions, except unpaved roads, are represented in the area. These sources include light and heavy dust-generating industries, active agricultural land, active construction sites, vacant lots, unpaved parking areas and unpaved road shoulders. There are four PM-10 monitors located within the modeling domain:

- Bethune Elementary School, which began monitoring on October 19, 2004, for hazardous air pollutants and also employs a dichotomous ambient particulate monitor that provides filter measurements once every six days;
- Durango Complex;
- South Phoenix; and
- West 43rd Avenue.

No exceedances were reported at South Phoenix in 2005 or 2006. An exceedance, however, was recorded at the Bethune Elementary on December 12, 2005, with a PM-10 concentration of 198 $\mu\text{g}/\text{m}^3$. As a result, this study will focus on the three monitors recording exceedances of the 24-hour PM-10 standard (i.e., Bethune Elementary, Durango Complex, and West 43rd Avenue). A brief summary for each is provided below. Figures 8-6 through 8-8 provide area views of the facilities and terrain that surround each of the three monitors.

- Bethune School is in the northeast corner of the modeling domain, at the street address of 1310 S. 15th Ave. It is located approximately one-third mile north of I-17, a mile south of Van Buren Street, and 1.5 miles west of 7th Street. While it is surrounded by residences, agricultural fields are located nearby just south of I-17 and a steel plant and related facilities are located less than a mile to the northwest. A complex of riverbed quarries, sand and gravel processing facilities, unpaved truck parking lots, and concrete casting facilities is located to the south.
- Durango Complex is located slightly more than a mile and a half to the southwest of Bethune School. The neighboring facilities are considerably more varied as a truck yard is located immediately across 27th Ave to the northeast. A complex of County office buildings is located immediately to the north and open fields are

Figure 8-5
Salt River Study Area

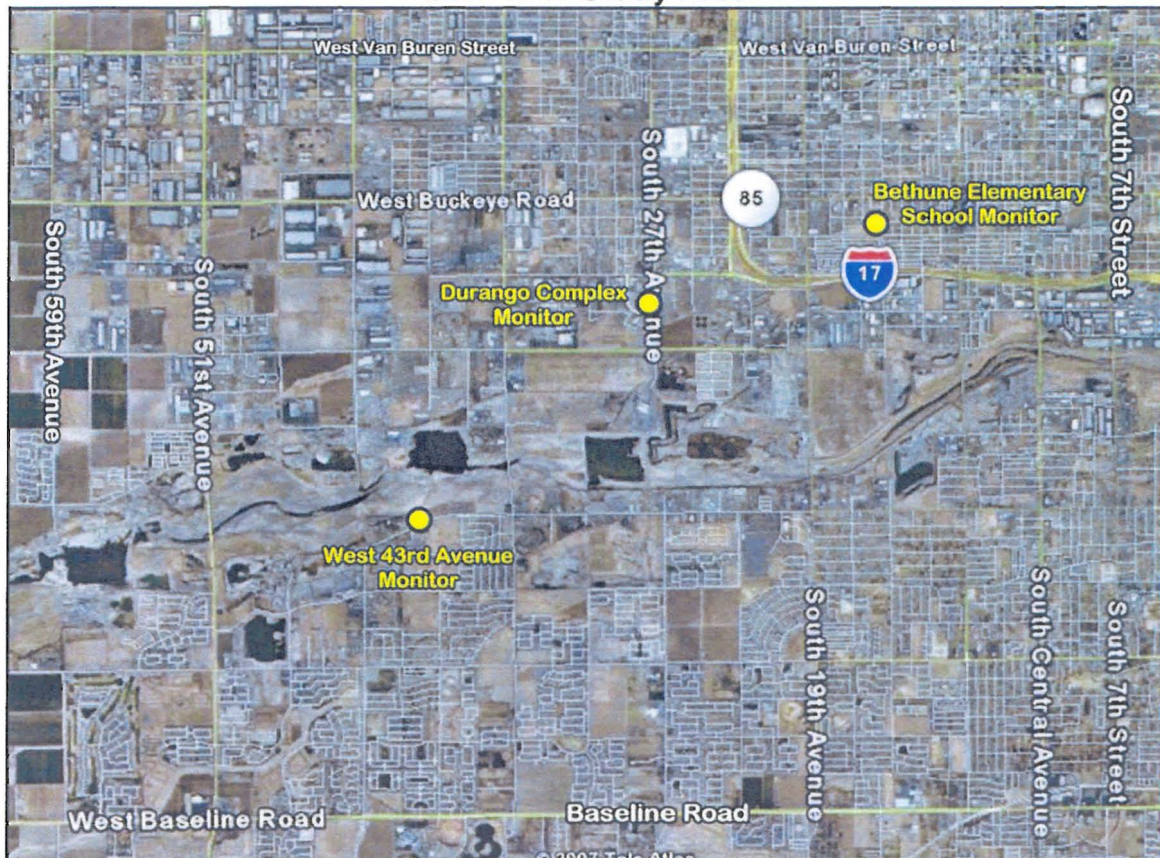


Figure 8-6
Bethune Elementary School Monitor
(Area View)

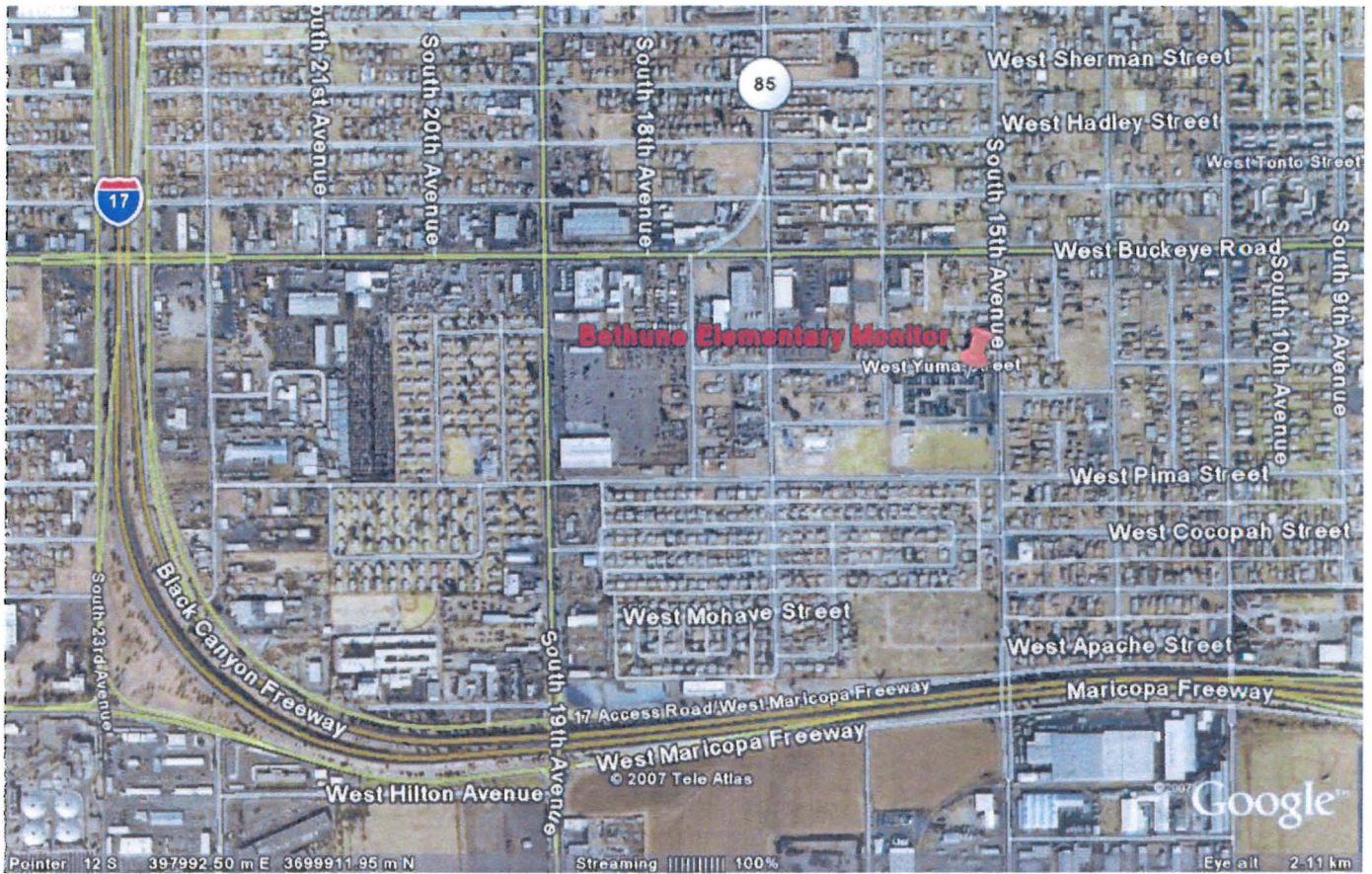


Figure 8-7
Durango Complex Monitor
(Area View)



Figure 8-8
West 43rd Avenue Monitor
(Area View)



located to the south. The area to the west includes the Maricopa County correctional complex.

Nearby to the southeast is agricultural land. I-17 is less than a mile to the northeast. The same complex of riverbed quarries, sand and gravel processing facilities, unpaved truck parking lots, and concrete casting facilities is located to the southeast.

- West 43rd Ave. is located in the southwest corner of the modeling domain to the south of the Salt River. A variety of industrial facilities with active unpaved surfaces are located to the west and south. Active sand, gravel processing and concrete casting facilities are located to the south and to the southwest. Alluvial soil from the Salt River is located directly to the north and on the other side of the industrial facilities to the west. A broad region of residential homes and construction activity is located to the south, southwest, and southeast.

Insights Gained from PM-10 Source Attribution and Deposition Study

MAG performed a PM-10 Source Attribution and Deposition Study to gain additional insight into the conditions leading to high PM-10 concentrations on stagnant days in the Salt River Area. An extensive field data collection effort was conducted in November and December of 2006. The following information obtained from this field work has been applied to the PM-10 modeling for the Salt River Area.

Particle Size Distribution

During the December 2006 portion of the intensive Salt River Area field study, MAG's monitoring contractor T&B Systems (T&B) used a multichannel particle counter to sample ambient particulate concentrations by particle size range. The instrument used to conduct this monitoring, a TSI Aerodynamic Particle Size (APS) Counter, recorded particle counts in 52 diameter ranges extending from 0.5 to 20.0 microns. For this study, only the counts of particles smaller than 10 microns were analyzed.

Particle counts were conducted when the T&B vehicle carrying the instrument was stationary at discrete sampling locations. Particle size distributions were measured at several locations in the Salt River Area. These locations included:

- West and east of 51st Avenue near Lower Buckeye Road;
- Downwind of an agricultural tilling operation near 43rd Avenue and Elwood Street;
- North and south of Lower Buckeye Road at 38th Avenue;
- East and south of the Durango Complex monitoring site near 27th Avenue and Durango Street;
- North of Lower Buckeye at 27th Avenue; and
- West of 22nd Avenue near the City of Phoenix Fire Department Training Facility.

The particle size distributions measured at these locations were strikingly similar to each other with one exception. One of three locations downwind of the agricultural tilling operation had a distribution weighted more toward larger particle sizes, probably because this one location—of all of the locations monitored—was directly in the downwind plume of a source with substantial visible dust emissions. The average diameter of particles smaller than 10 microns, at locations other than in the agricultural tilling plume, varied between 3.8 and 5.0 microns. The average particle diameter in the tilling plume was 6.3 microns. These results suggest that particles above about 7 microns in diameter settle out of the air relatively quickly in the Salt River and that PM-10 ambient concentrations are dominated by particles from 3 to 7 microns in diameter.

This finding indicates that particles producing the majority of mass in PM-10 concentrations measured during low wind periods remain aloft for 1 to 5 hours, thus pointing to local sources as producing the majority of impacts at monitors when wind speeds are less than 1 mile per hour and wind directions meander each hour, which is the predominant meteorological pattern during winter stagnant low wind conditions.

Mixing Height

Mixing height is a term used to describe the elevation level up to which vertical mixing of air takes place. A low mixing height provides less space for mixing (i.e., dispersion) and increases the potential for pollutant concentrations to rise. A high mixing height provides more space for dispersion and an increased potential for concentrations to decrease.

The 2005 ADEQ TSD for the Salt River Area relied on soundings taken at the Tucson Airport to characterize mixing height on the same date in the Salt River. For the January 8, 2002 low wind day this produced constant estimates of 178 meters from 1:00 a.m. to 7:00 a.m. followed by a rapid increase from 8:00 a.m. to 2:00 p.m. when the maximum height of 1,367 meters was reached. That value remained constant from 2:00 p.m. to 5:00 p.m. after which reductions gradually lowered the mixing height to 187 meters at midnight.

Given the evident relationship between mixing height and concentrations recorded at Durango and West 43rd monitoring sites, it is important to confirm that the mixing height estimates produced by AERMET are correct. Fortunately, a miniSODAR unit was placed adjacent to the West 43rd monitor during the 2006 field study. SODAR units emit a high frequency sound pulse whose reflection time can be used to estimate mixing height. T&B Systems prepared an analysis of SODAR data collected on December 6th. The good agreement between measured and modeled values confirmed the accuracy of the AERMET estimates. It also showed that low mixing height is a principal contributor to the elevated concentrations recorded during low wind days in the Salt River.

In contrast to the low wind days observed in December 2006, the mixing heights for December 12, 2005 were even lower. As can be seen in Figures 8-1 and 8-2, the mixing heights at both the Durango and West 43rd monitoring sites produced by AERMET never

exceeded 150 meters during the mid day ventilation period. The result is that concentrations never fell below $100 \mu\text{g}/\text{m}^3$ during the entire 24-hour period at either monitor.

Particle Deposition

To better understand particle deposition dynamics in the Salt River Area, MAG tasked Sierra with a study of dust fallout near the Durango Complex and W. 43rd Avenue monitors. To conduct this study, particulate matter deposition was monitored using dust fall jars over one week periods at four locations surrounding each monitor by Applied Environmental Consultants (AEC), a subcontractor to Sierra Research. Generally, one jar was placed between the monitor and the nearest arterial road, one monitor was placed on the opposite side of the monitor, and two were placed at other locations of interest near the monitor.

The jars consisted of polyethylene tubs approximately 18 inches in diameter and 6 inches deep, mounted on top of portable wooden stands 6 feet in height. Jars were prewashed with dionized water and transported to and from the sampling locations with plastic covers to avoid contamination or loss of sample during transport. Upon return of each jar to AEC laboratories, the jar was rinsed with dionized water using a rubber policeman to remove particulate from the jar, and the aqueous solution was labeled and stored.

Since the mass of particulate in each solution was very small, the use of standard soil test methods for determining particle size was ineffective. After discussion with several Phoenix-area soils laboratories, Sierra learned of a particle counting method that offered the ability to quantify trace levels of particulate in aqueous solutions by particle diameter range. Particle Measurement Technology in Ventura, California, was retained to conduct particle counts using a laser counting technology. Only a portion of each solution was used in each count, allowing for the use of duplicate counts to quantify instrumental precision.

The particle counts were converted to particle mass using standard conversion methods. All particles were assumed to be spherical with an average density of 2.65 grams per cubic centimeter.¹ The results of the jar analyses are shown in Table 8-3.

The size distributions of particles collected by the dustfall jars were weighted more toward coarser particle diameters than the ambient samples analyzed by the T&B APS counter. This could result from the jars being placed closer to significant emissions sources (e.g., arterial roads) than was the case for the APS sampling locations. The distribution of collected mass in the jars shows that the jars nearest arterial roads received more dustfall than those farther away from the roads.

¹ <http://www.ju.edu.jo/ecourse/Lw%20Environment/Materials/lecture%2003.htm>, accessed on October 15, 2006.

Table 8-3
Size Fraction of Dustfall Collected Near
Durango Complex and W. 43rd Avenue Monitors

Size Range	Durango Complex				W. 43 rd Avenue			
	#1	#2	#3	#4	#1	#2	#3	#4
0-2.5 μm	8.0%	7.0%	10.8%	17.2%	18.4%	23.7%	20.7%	9.8%
2.5-5.0 μm	15.5%	15.7%	15.3%	18.1%	18.2%	21.0%	20.4%	17.7%
5.0-7.5 μm	30.3%	31.9%	28.2%	25.9%	26.0%	24.4%	24.9%	31.0%
7.5-10.0 μm	46.2%	45.5%	45.7%	38.8%	37.3%	30.9%	33.9%	41.5%
Mean Dia. μm	5.8	5.3	5.6	6.4	6.6	6.7	6.5	5.9

Travel Activity

MAG hired a contractor to collect vehicle counts at 14 locations throughout the Salt River Area in December 2006. The contractor used axle count to allocate vehicles to a specific class; no measurements of weight were collected. Vehicle classes were defined as follows:

- Light-duty – 2 axles or less
- Medium-duty – 3 to 4 axles
- Heavy-duty – 5 axles +

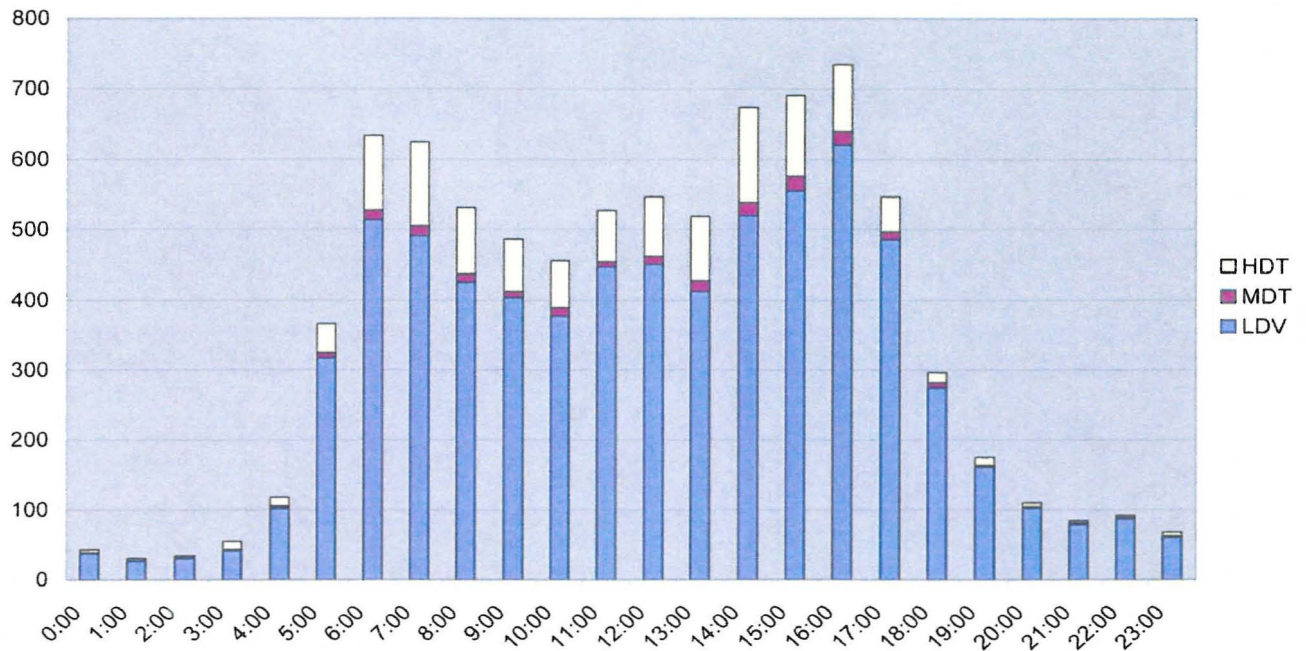
Since weight is a key determinant of fugitive dust emissions on paved roads (as it is raised to 1.5 power) it is important to understand what share of travel comes from medium-and heavy-duty vehicles. Lacking data on the mix of vehicles operating within the modeling domain, which includes a number of aggregate processing and related production facilities, the distribution of vehicle travel would be based on travel model estimates provided by MAG. Table 8-4 presents a comparison of the vehicle mix estimates from MAG's travel model and counts taken along the portion of 27th Avenue that is adjacent to the parking lot in which the Durango monitor is located. It shows that although there is reasonable agreement between the total predicted and measured counts, the vehicle distributions are very different. The travel model significantly underestimates the level of heavy truck activity on 27th Avenue. Similar differences were noted for other arterial roads within the modeling domain. This finding reinforces the importance of using local data to characterize activity in developing emission inventory estimates for the modeling domain.

Another insight provided by the vehicle count data is the diurnal distribution of travel that occurs on the principal arterials located within the modeling domain. Figure 8-9 shows the distribution of travel recorded, by vehicle type on December 5-7, 2006 for 27th Avenue between Durango and Lower Buckeye. It shows a dramatic rise in traffic during the morning hours. As seen in Figures 8-1 and 8-2, the mixing height does not rise appreciably until 11 am. This means that the emissions associated with the morning travel activity remain concentrated and will have significant impacts on nearby monitors and receptors

Table 8-4 Contrast Between Vehicle Count & Model Predicted Vehicle Mix On 27th Avenue (between Lower Buckeye and Buckeye) 2005 Forecast versus December 2006 Counts				
Hour	Total	Light	Medium	Heavy
Travel Model*				
4am~5am	117	107	4	6
5am~6am	117	107	4	6
6am~7am	572	555	8	8
7am~8am	572	555	8	8
8am~9am	572	555	8	8
Vehicle Count				
4am~5am	110	95	4	10
5am~6am	362	309	10	43
6am~7am	637	519	15	104
7am~8am	614	485	13	116
8am~9am	542	433	13	96

* MAG's travel model does not produce hourly estimates of travel. Instead, estimates are prepared for periods of the day (e.g., am, pm, etc.). Those estimates must be divided by the # of hours within each period (e.g., the am period covers 3 hours) to produce hourly values, which are the same for each hour within the period represented. Thus, the estimates for the 4 am – 6 am are the same because they come from the nighttime period. Similarly, the estimates for 6am – 9am are the same because they come from the am period.

Figure 8-9
Average Hourly Traffic on 27th Avenue
Between Durango and Lower Buckeye
(December 5-7, 2006)



Significance of Local Sources

One of the objectives of the field study was to gain insight into the significance of transport on concentrations recorded within the Salt River Area. In part this was because the 2005 TSD for the Salt River concluded that background concentrations were responsible for “about half of the measured concentrations within the Salt River PM-10 Study Area.” That finding indicated that emission reductions outside of the Salt River Area are just as important as those inside to demonstrating attainment. If, however, a larger fraction of the concentrations impacting the monitors exceeding the ambient PM-10 standard are produced within the modeling domain, it would suggest the need for a different mix of control measures (i.e., one focused more on local control measures). To provide insight into this issue, two different datasets were collected: (1) measurements of PM-10 concentrations throughout the modeling domain and (2) measurements of wind speed and direction both on the ground and aloft. The PM-10 measurements at the boundaries provided insight into the significance of transport from upwind areas outside of the modeling domain. The measurements of wind speed and direction provide the information needed to construct back trajectories of air parcels over time, which in turn provide insight into how long air parcels remain within the modeling domain.

A summary of PM-10 measurements recorded throughout the modeling domain during the morning hours of November 15, 2006 is shown in Figure 8-10. It shows that concentrations throughout the Salt River Area are anything but uniform. The highest concentrations were recorded between Central Avenue and 67th Avenue (east to west) and between Buckeye Road and Broadway Road (north to south). Lower concentrations were recorded outside of this area suggesting that transport, particularly from the east may not be a significant issue. Figure 8-11 presents a summary of measurements collected to the north of the modeling domain. It shows that concentrations north of Van Buren Street were low relative to those observed within the central area of the modeling domain after 8:00am on November 16, 2006. Measurements collected for other periods of the day showed similar results for this area.

Figure 8-12 illustrates the results of a back trajectory analysis of 5-minute wind speed and wind direction data collected at the West 43rd Avenue monitor on December 6, 2006. It shows that under stagnant conditions, when wind speeds are low and wind direction frequently changes, little of the air impacting the monitor at 9:00am came from outside of the modeling domain. This strongly suggests that background is not a significant source under these conditions. A similar analysis was constructed from SODAR measurements of winds aloft to address the concern that high concentrations recorded during the morning and then elevated as the mixing height increased might be responsible for deposition later in the day. This analysis however was not a back trajectory, but a forward trajectory as it documents where the air parcels will be in the succeeding 8-hour period. The results of that analysis are displayed in Figure 8-13. It shows that in contrast to the low wind conditions recorded at ground level, the winds aloft are higher and the direction is more consistent. The result is that concentrations elevated with mixing height do not remain within the modeling domain, but instead are transported well outside of the modeling

(November 15, 2006)

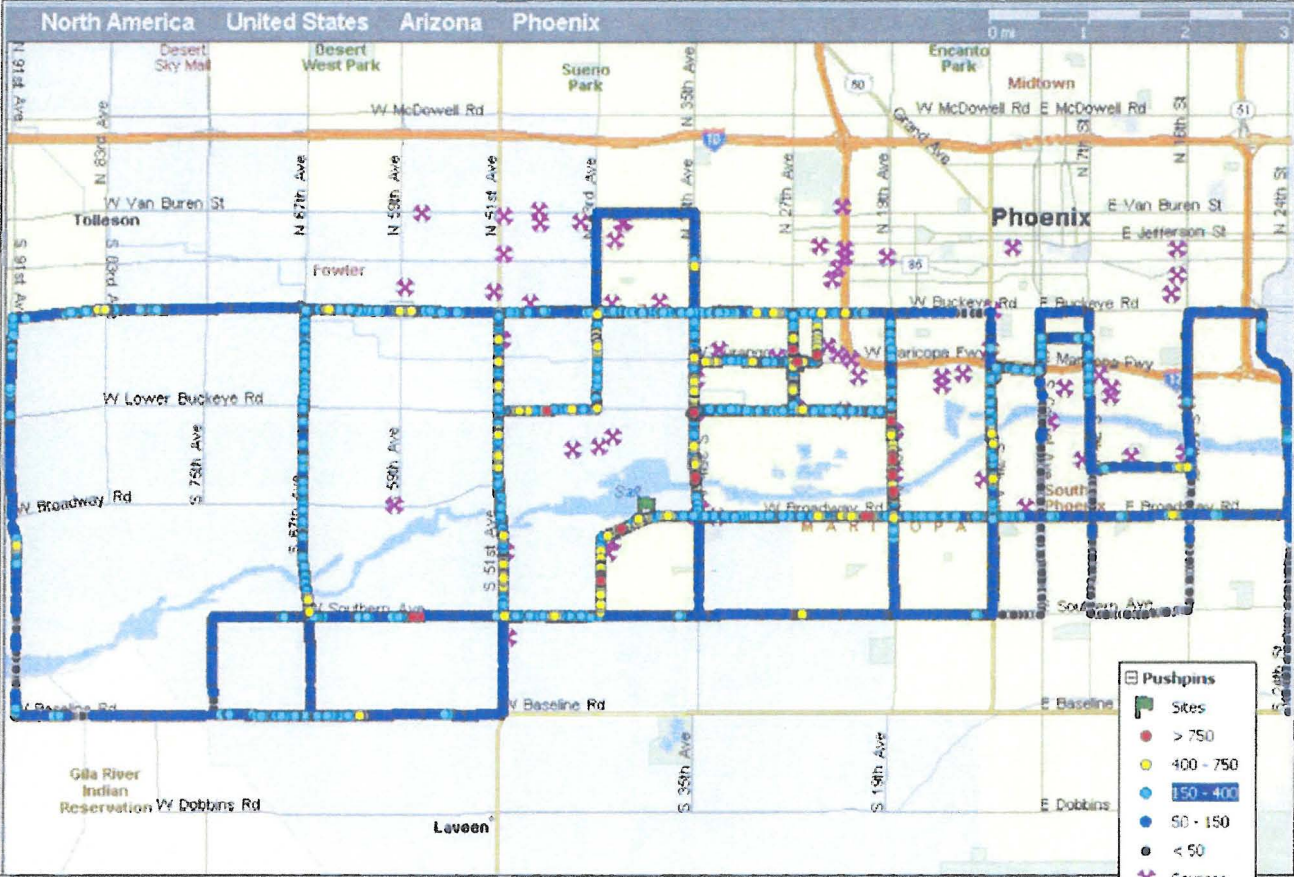


Figure 8-11
Summary of PM-10 Monitoring Data
(November 16, 2006 – After 8 a.m.)

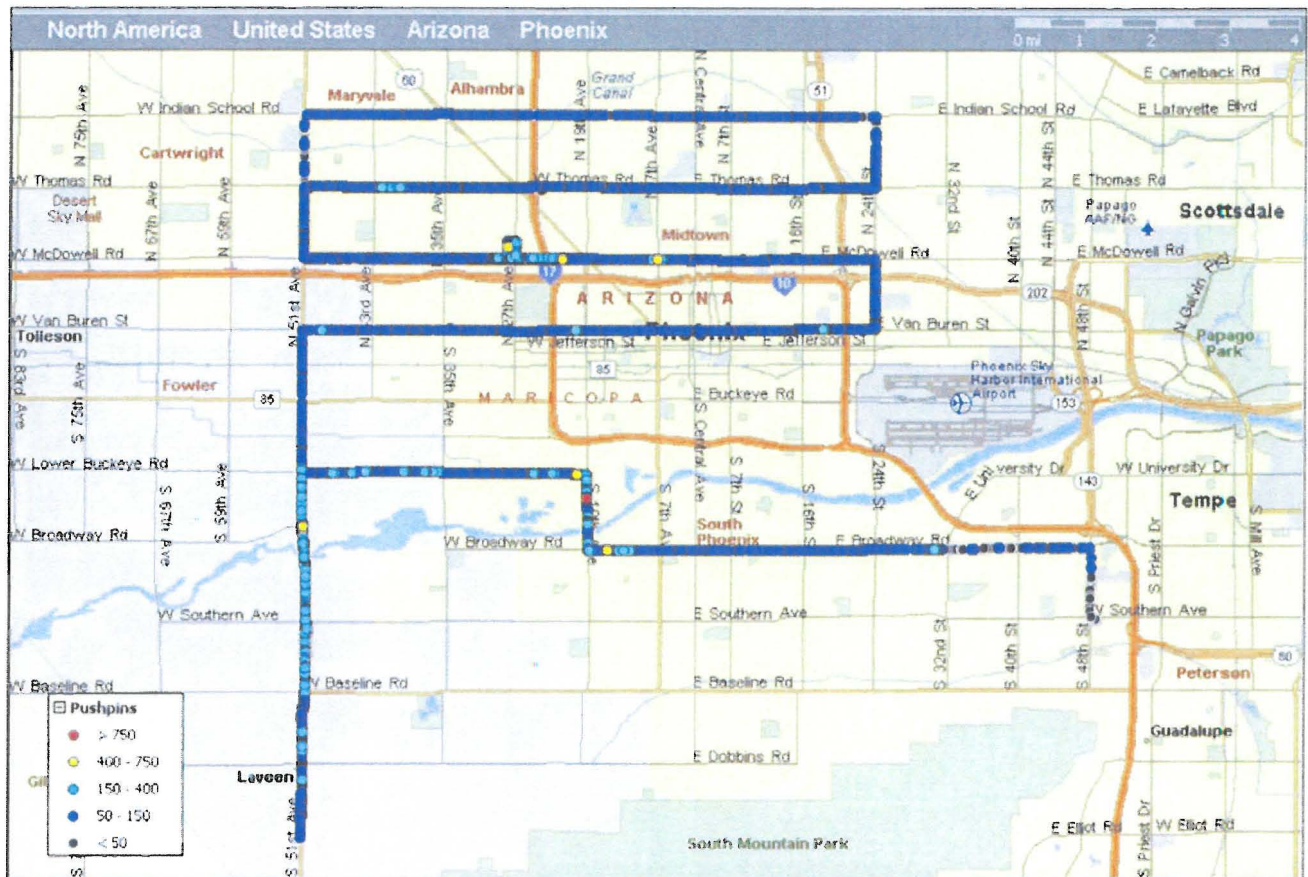


Figure 8-12
Back Trajectory of Winds Impacting the West 43rd Avenue Monitor
(December 6, 2006 at 9 a.m.)

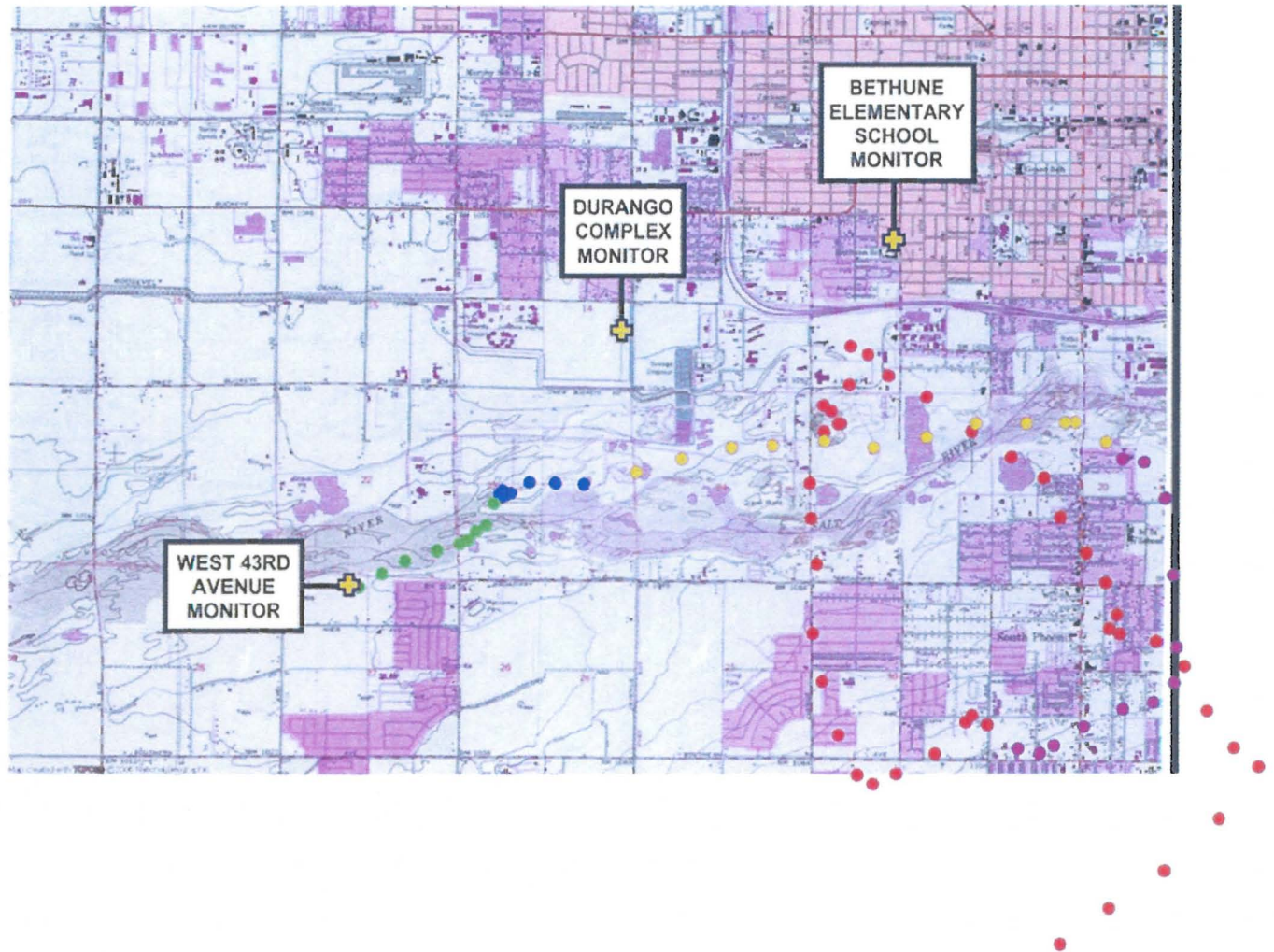
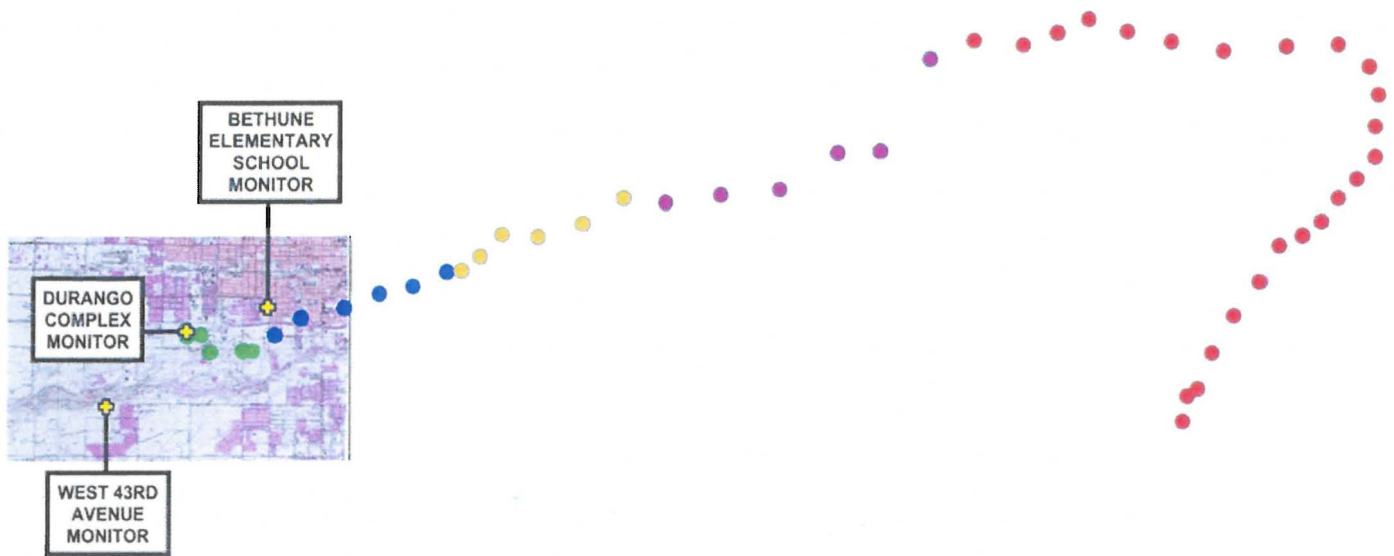


Figure 8-13
Forward Trajectory of Winds Aloft Starting at the West 43rd Avenue Monitor
(December 6, 2006 at 1 p.m.)



domain. Similar results were seen from forward trajectory analysis of radar data of higher altitude winds. These results collectively suggest that sources inside the modeling domain are primarily responsible for the emissions causing exceedances of the ambient PM-10 standard under low wind conditions.

Model Performance

Model performance has been a significant problem for past PM-10 modeling efforts conducted by both MAG and ADEQ. The most recent example was ADEQ's 2005 TSD for the Salt River where predicted concentrations only accounted for 20.0 out of 138.6 $\mu\text{g}/\text{m}^3$ (i.e., 14%) on low wind days and 31.4 out of 192.0 $\mu\text{g}/\text{m}^3$ (16.4%) on high wind days. One of the drawbacks of both ISCST and AERMOD, which contributes to the shortfall in predicted concentrations, is the lack of "carry-over" from one hour to the next; another is the lack of information on secondary particulate formation. Another potential cause of underestimating concentrations on low wind days is overestimating mixing heights. Still another is underestimating activity and emissions on a specific design day.

To offset some of these modeling deficiencies, MAG contractors collected a variety of activity, meteorological and concentration data on days when Salt River monitors exceeded the ambient 24-hour PM-10 standard in December 2006. Access to this information precludes the need to rely on estimates of many of the parameters needed to prepare the emissions inventories and meteorological data sets and perform air quality modeling. Using the collected data, estimates of emissions were only prepared for those sources which impacted the Durango Complex and West 43rd Avenue monitors on the December 6, 2006. A summary of the results of the model predicted concentrations by source category is presented in Figure 8-14. It shows good agreement between model predicted and monitored values for most hours of the day. Notable shortfalls occurred during the late night and early morning hours when anthropogenic activity is lowest.

A summary of the distribution of sources impacting the monitor (i.e., $\mu\text{g}/\text{m}^3$) versus emissions produced by those sources (i.e., tons/day) is presented in Figure 8-15. Not surprisingly, the distributions are different. The modeled values account for the effects of wind direction and dispersion, the inventory values do not. On this date, the principal sources impacting the monitor include vehicle traffic, trackout, construction, agriculture and industry. These results, however, are dependent on day-specific activity estimates. When this information is not available and annual/seasonal inventories are the principal data source, the source distribution and monitored impacts will change.

Figure 8-14
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
Durango Complex (December 6, 2006)

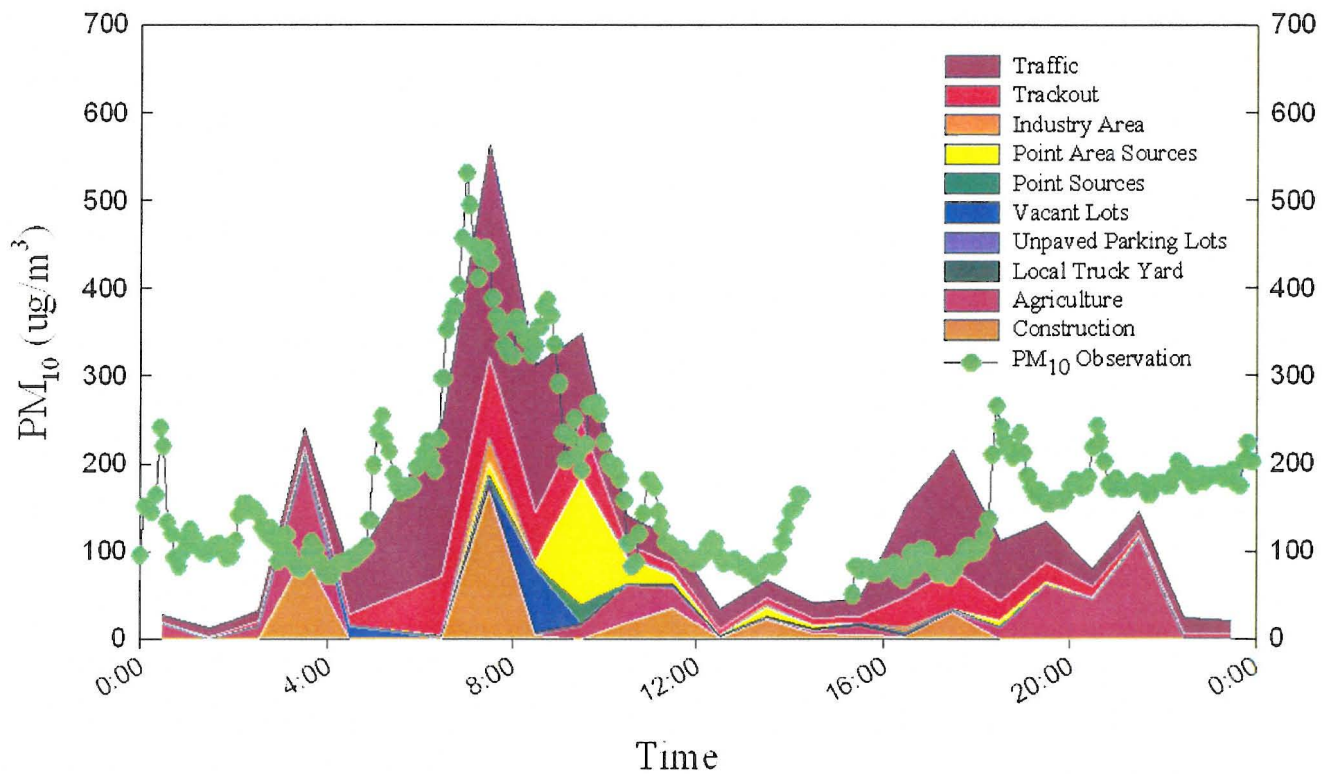
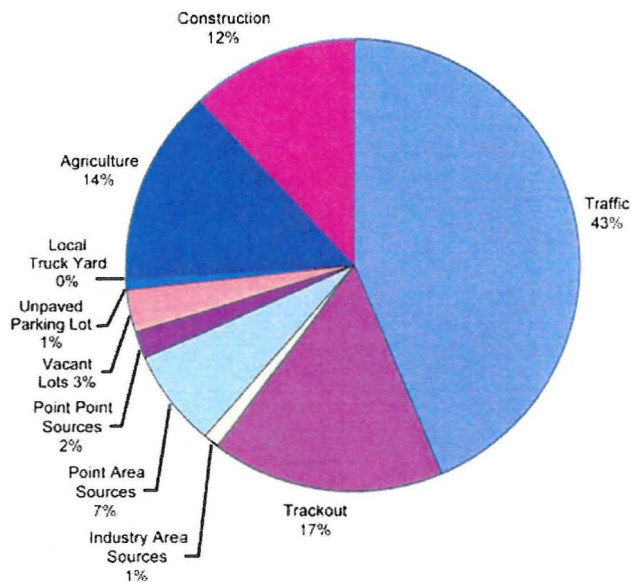
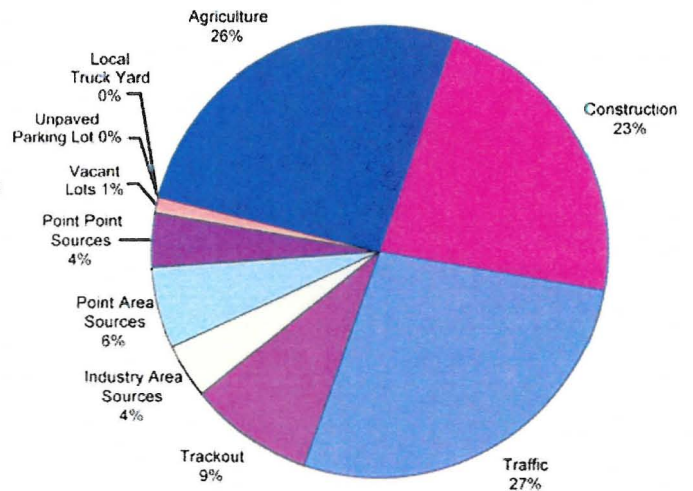


Figure 8-15
Source Distribution Comparison
Monitor versus Emission Inventory
For the Durango Complex (December 6, 2006)

Durango Monitor Impacts



Modeling Domain Inventory



Inventory Development

To enable the use of new source emission information in the modeling analysis of impacts at the Salt River PM-10 monitors, Sierra refined existing emission inventories specific to the modeling domain. The existing emission inventories that served as the bases for these refinements were the 2005 inventory compiled by the Maricopa County Air Quality Department (MCAQD) and the 2002 inventory developed for modeling use in the 2005 PM-10 attainment plan prepared by the Arizona Department of Environmental Quality (ADEQ). Both of these inventories were comprehensive with respect to the spectrum of sources included and were current with respect to use of available data.

In refining existing emission inventories, Sierra focused on those source categories that produced the greatest impacts at the monitors as reported in the ADEQ Technical Support Document (TSD) for the 2005 PM-10 attainment plan. To improve the accuracy of modeling major area source category emissions, actual boundaries of individual area sources were used in the modeling input files rather than to uniformly distribute these emissions over 400-meter square grid cells as had been done previously. Because stack emission rates in the Salt River Area were small in comparison with area source emissions, Sierra did not update or refine stack emission data as compiled by MCAQD except to substitute actual daily operating hours on design days for annual average day operating hours.

To the extent possible, activity data specific to each design day for each major source category was collected and used. During the December 2006 field study period, December 5 through 7 were selected as days for extensive analysis as the 24-hour PM-10 standard was exceeded at one or both of the Salt River monitors on these days. For these days, actual traffic counts, measured paved road emission factors, actual construction location data, and reported agricultural activity levels, among other data, were used to populate the expanded design day-specific emission inventories.

The details of the calculation of the emissions inventory for the modeled days are provided in Chapter V of the TSD for the Five Percent Plan. A tabulation of the PM-10 emission inventory contributions generated by each of the previously described source categories in the Salt River Area is presented below in Table 8-5. While separate values are listed for the low and high wind design days, a review of the entries shows that most are the same and the only notable differences are for construction activities and the local truck yard. Paved road related emissions represent the dominant source category accounting for over 65% of the inventory under both low and high wind conditions. It should be noted, however, that many sources contribute to trackout and that the distribution of sources displayed in the table does not account for each source's sole contribution to the inventory. No values for windblown emissions are displayed. This is because they are calculated internally by the air quality model using input parameters (e.g., wind speed and wind speed-specific emission factors) and not provided in model outputs.

Table 8-5 Summary of Source Specific PM-10 Emissions for Salt River Area Modeling Domain And Design Day Conditions (tons/day)		
Source Category	Low Wind	High Wind
Freeway Traffic	0.55	0.55
Arterial Traffic	5.05	5.05
Secondary Traffic	2.21	2.21
Arterial Trackout	2.17	2.17
Secondary Trackout	0.79	0.79
Arterial Shoulders	0.08	0.08
Secondary Shoulders	0.03	0.03
Industrial Area	2.70	2.70
Industrial Point	0.60	0.60
Vacant Lots	0.13	0.13
Unpaved Parking Lots	0.04	0.04
Agricultural Operations	0.10	0.10
Construction Activities	1.98	2.20
Local Truck Yard	0.00	0.01
Total	16.42	16.66

Air Quality Modeling

In the PM-10 modeling protocol for the Five Percent Plan (TSD, Appendix I, Exhibit 1), MAG determined that grid-based dispersion modeling represents the best option for evaluating source contributions impacting the Salt River monitors. Several factors contributed to this decision, including the following:

- Complexity of meteorology and terrain in the Salt River;
- Diversity of sources located within the Salt River;
- A PM-10 Source Attribution and Deposition Study funded by MAG in 2006 to quantify the impact of sources located within the Salt River Area; and
- Previous work by ADEQ characterizing many of the parameters needed to perform dispersion modeling within the Salt River Area.

Based on a review of EPA guidelines, it was also determined that AERMOD was the most suitable dispersion model for evaluating hourly source contributions to PM-10 exceedances recorded at the Salt River monitors (i.e., Durango Complex and West 43rd Ave.). AERMOD (AMS/EPA Regulatory Model) is a steady-state Gaussian plume dispersion model that assesses pollutant concentrations from a variety of sources. Sources and receptors located in complex terrain can be simulated considering the transport and dispersion from multiple point, area and/or volume sources based on characterization of the boundary layer. Mobile sources are considered as multiple area or volume sources joined together.

EPA adopted AERMOD as a regulatory model on December 9, 2005, as a replacement for ISCST3 (i.e., the model employed in the previous ADEQ analysis). Compared with ISCST3, AERMOD contains improved algorithms for dealing with low wind speed (near calm) conditions. As a result, AERMOD can produce model estimates for conditions when the wind speed is less than 1 m/sec.^{1, 2} This feature is of particular interest for stagnant conditions that characterize the low wind design period of December 11-13, 2005. Another consideration in the selection of AERMOD is that no other model was found to perform better for modeling area source fugitive dust. This is important because fugitive dust is a major contributor to high PM-10 levels in the Salt River Study Area and throughout the remaining nonattainment area.³

¹ Revisions to the Guideline on Air Quality Models: Adoption of Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, U.S. Environmental Protection Agency, Federal Register, Vol. 70, No. 216, p. 68218, November 9, 2005 (Attachment IV)

² User's Guide for AERMET, EPA-454/B-03-002, November 2004

³ 2002 Periodic Emissions Inventory for PM-10 for the Salt River Area, Technical Support Document, Air Quality Division, Arizona Department of Environmental Quality, June 2005

Other characteristics supporting the selection of AERMOD for application in the Salt River Study Area include the following:

- A wide range of regulatory applications can be handled in all types of terrain;
- Gravitational settling and dry deposition are handled well when fugitive dust emissions are properly specified;
- Low-level emission sources, such as area sources, can be modified to produce a more realistic urban dispersion; and
- The minimum layer depth can be changed to calculate the effective parameters for all dispersion settings.

Despite its advantages for PM-10 modeling, AERMOD was also determined to have some shortcomings:

- Urban transport of PM-10 is not addressed;
- Secondary PM-10 formation is not addressed;
- Source-receptor locations need to be well defined; and
- Representation of the modeling domain can be data-intensive (e.g., microinventories, meteorology).

As discussed below, none of these concerns were determined to severely limit model performance in the Salt River Area.

- *Urban Transport* – An analysis of monitors located outside and upwind of the modeling domain was performed to quantify background values for use in representing urban transport separately under low wind and high wind conditions.
- *Secondary PM-10 Formation* – While fugitive dust is the dominant source of emissions impacting monitors within the Salt River Area, other sources contributing to PM-10 concentrations include directly emitted PM-10 (e.g., Diesel soot, etc.) and secondary particulate (i.e., particles formed through atmospheric chemical reactions from precursor gases, primarily oxides of nitrogen, oxides of sulfur and ammonia). This analysis quantified fugitive dust and PM-10 directly emitted within the Salt River Area. Given the limitations of AERMOD and the fact that secondary particulate is produced throughout the nonattainment area, it will be addressed as a component of background.
- *Source Receptor Locations* – Data collected in the Source Attribution and Deposition Study were used to identify significant sources within the modeling domain. Effort was focused on collecting activity data specific to the design days where possible to improve the representation of source emissions in the modeling

inventory. Receptors were located at the three monitoring sites located within the modeling domain, which exceeded the standard, so that predicted values could be contrasted with monitored values under low and high wind conditions.

- *Representation of the Modeling Domain* – As noted earlier, the previous ADEQ modeling analysis characterized many of the parameters needed to represent the modeling domain. In addition, the Source Attribution and Deposition Study provided extensive information on activity within the modeling domain. In light of these considerations, this issue was determined not to be a concern.

Model Performance

AERMOD was configured with the meteorological inputs and emission inventories described above and used to estimate each source's contribution to hourly concentrations on each of the design days for each of the monitoring sites. The hourly concentrations were then combined with the estimates of background described above and contrasted with the hourly and daily concentrations recorded at the three monitoring sites to assess model performance. Figures 8-16 through 8-22 provide a summary of how well model predictions compare with measured concentrations on an hourly basis. The figures display each source category's contribution to the predicted hourly concentration. Except for the high wind day, background values are included at a constant hourly concentration. Listed below is a brief set of comments on each of the figures.

- Durango Complex (December 12, 2005) – Figure 8-16 shows reasonable agreement between predicted and measured values on a diurnal basis. Key differences are the overprediction of the morning peak and the underprediction of late night concentrations. These are largely the result of differences between measured values and diurnal estimates of travel activity in 2005. Another contributor to the overestimate in the morning appears to be an inflated estimate of emissions from industrial area sources. In the process of investigating the cause, it was determined that industrial sources located several miles upwind (at 10 am, the wind was coming from the southwest) were shown to be impacting the monitor, even though the wind speed was 0.6 mph (per AERMET). Based on this review, it appears that AERMOD does not limit receptor impacts to sources located within an hour's travel distance (based on wind speed). Instead, it appears that all characterized upwind sources will impact a receptor each hour regardless of their distance from the receptor. This indicates the impact of some sources on the monitor(s) is overpredicted. The magnitude depends on the distance between source and receptor, wind speed and wind direction. While insufficient time was available to investigate the extent of this issue, it is a concern only under low wind speeds. At higher speeds, this inconsistency disappears.
- West 43rd Avenue (December 12, 2005) – As shown in Figure 8-17, the poorest model performance occurs for this monitor and date. The emissions inventory, in

combination with the meteorological inputs, fails to account for the “double hump” in the measured data. Given the low recorded wind speeds, it appears to be the result of a “localized event.” A contributing factor may also be that AERMOD cannot adequately characterize source contributions over an hour at low wind speeds using a single average wind direction, since wind direction (and source contributions) may have been frequently changing during that hour (as seen in the 5-minute wind data collected in the December 2006 field study).

- Bethune Elementary School (December 12, 2005) – Figure 8-18 shows the diurnal source contributions predicted by the model, but no diurnal profile of measured concentrations. That is because the measurements at that site were collected on a filter and only a 24-hour value is available. It is expected that the morning peak is overpredicted; the cause aside from the limitations noted above is not clear.
- Durango Complex (December 13, 2005) – Missing from Figure 8-19 is the strong morning peak in both measured and modeled concentrations evident in the previous figures. AERMOD underpredicts the elevated concentrations recorded during late night and early morning hours when anthropogenic activity is low. The agreement between modeled and measured values during the day when anthropogenic activity is higher, however, is good.
- West 43rd Avenue (December 13, 2005) – Figure 8-20 shows that AERMOD underpredicts the concentrations recorded throughout most of the day. Despite the underprediction, the diurnal profile of predicted concentrations tracks well with those of the measured concentrations. Again, the greatest shortfall occurs during the late night and early morning hours when anthropogenic activity is lowest.
- Durango Complex (February 15, 2006) – The first notable feature of Figure 8-21 is the difference in hourly background concentrations. The second is the uncharacteristic early overprediction of the morning peak. Since the morning hours have low wind conditions similar to the December 2005 episode, the issues noted for those days could be contributing to the differences seen. The inability to predict the sharp rise in afternoon concentrations caused by the onset of the high winds is thought to be caused by the failure of the wind-dependent emission factor algorithm in AERMOD to duplicate the initial hour spike in windblown emissions and the depletion of surface particles available for entrainment in subsequent hours even when average hourly wind velocities increase.
- West 43rd Avenue (February 15, 2006) – Figure 8-22 shows that AERMOD underpredicted the peak morning concentrations and had a delayed prediction of the afternoon peak. The same concerns noted for the Durango Complex on this date apply at West 43rd Avenue.

Figure 8-16
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
Durango Complex (December 12, 2005)

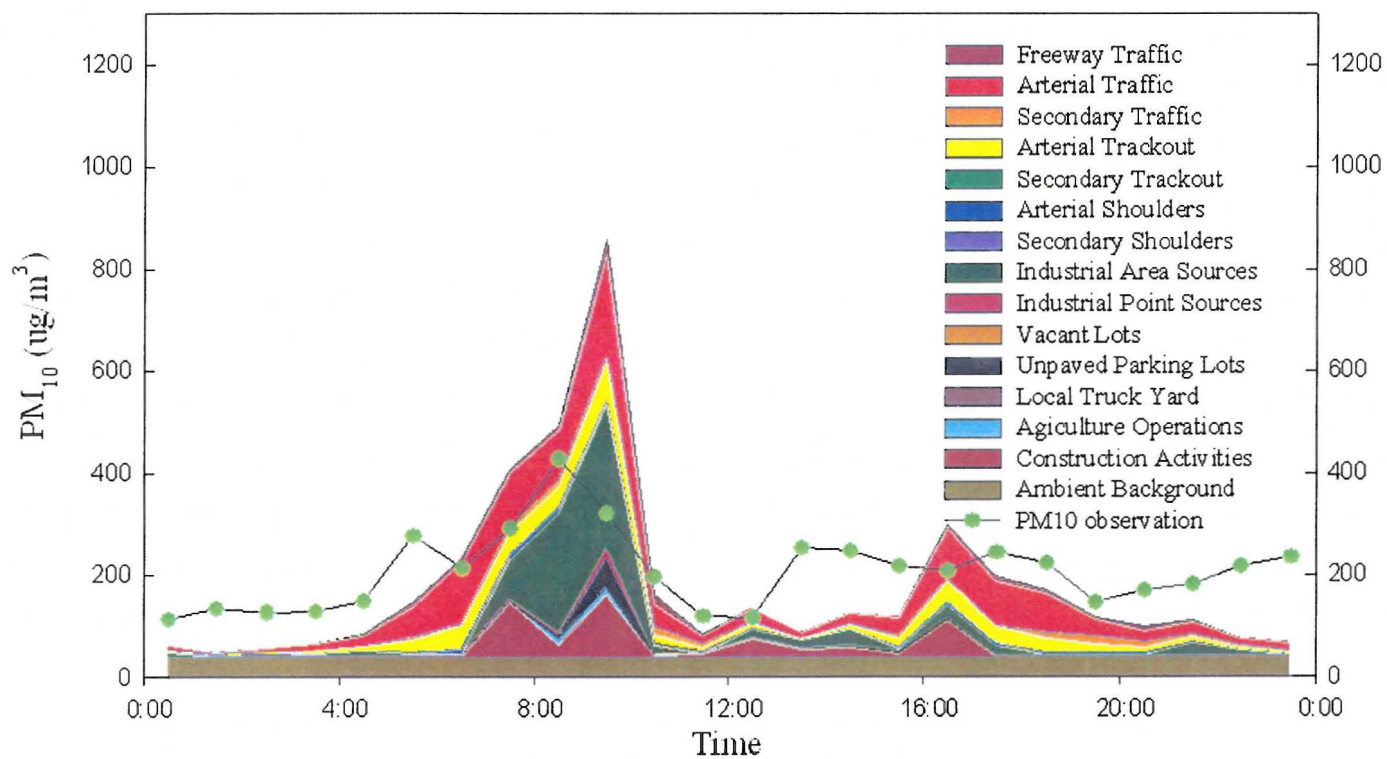


Figure 8-17
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
West 43rd Avenue (December 12, 2005)

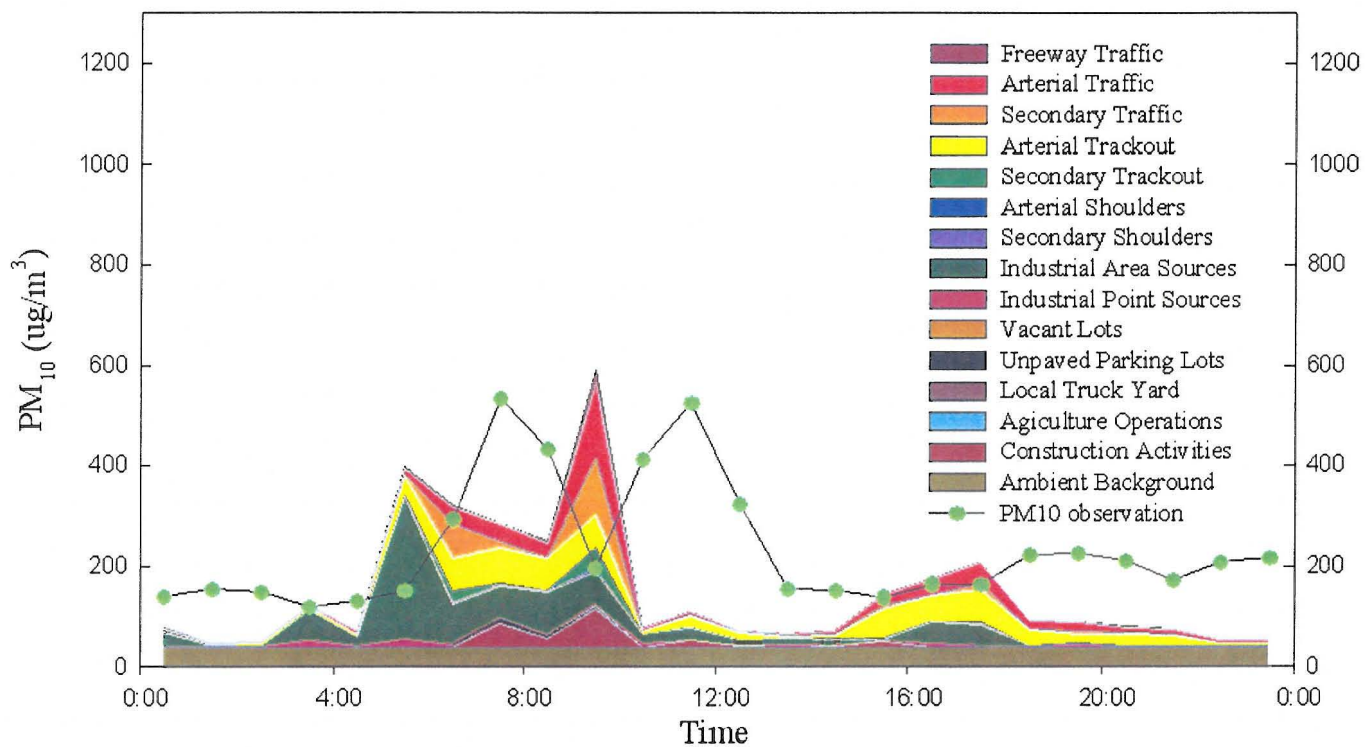


Figure 8-18
Diurnal Distribution AERMOD Predicted Source Concentrations for
Bethune Elementary School (December 12, 2005)

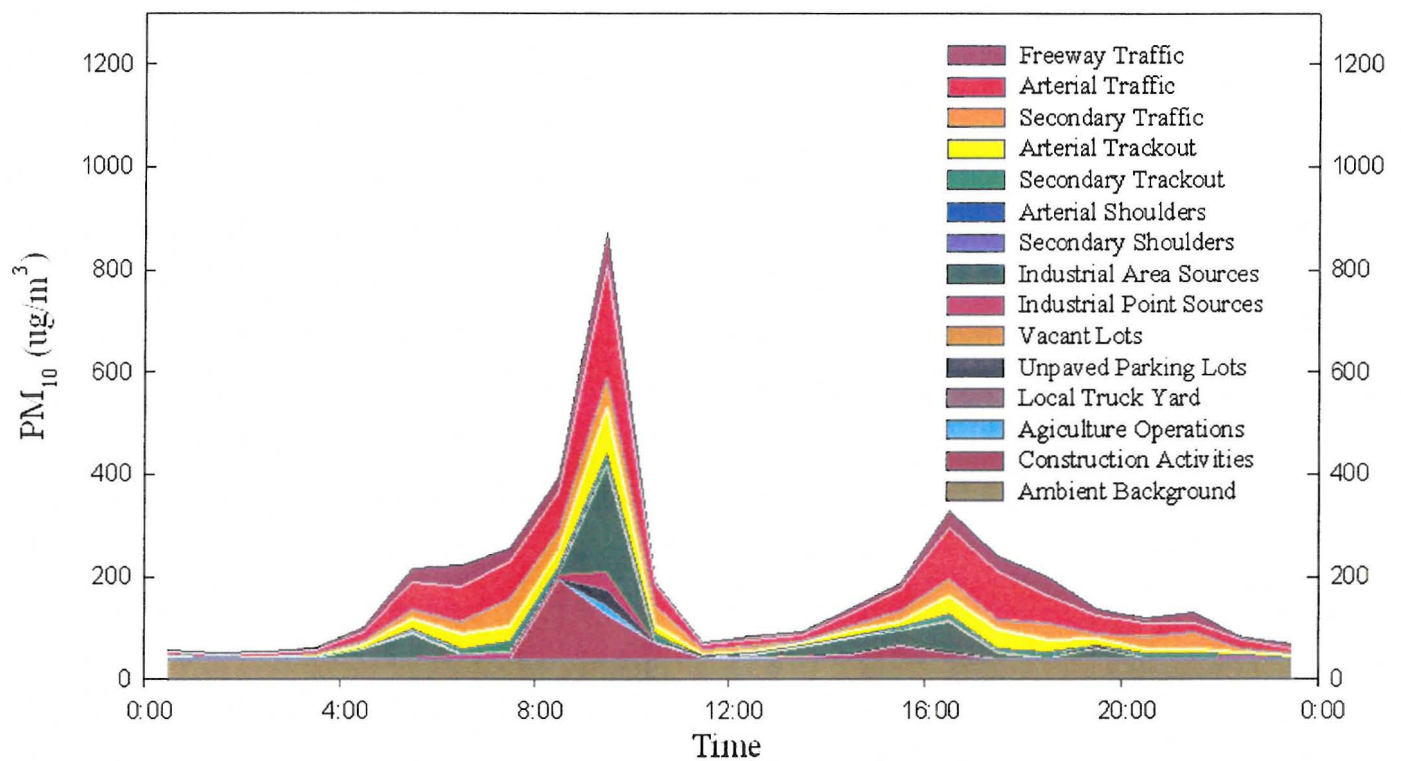


Figure 8-19
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
Durango Complex (December 13, 2005)

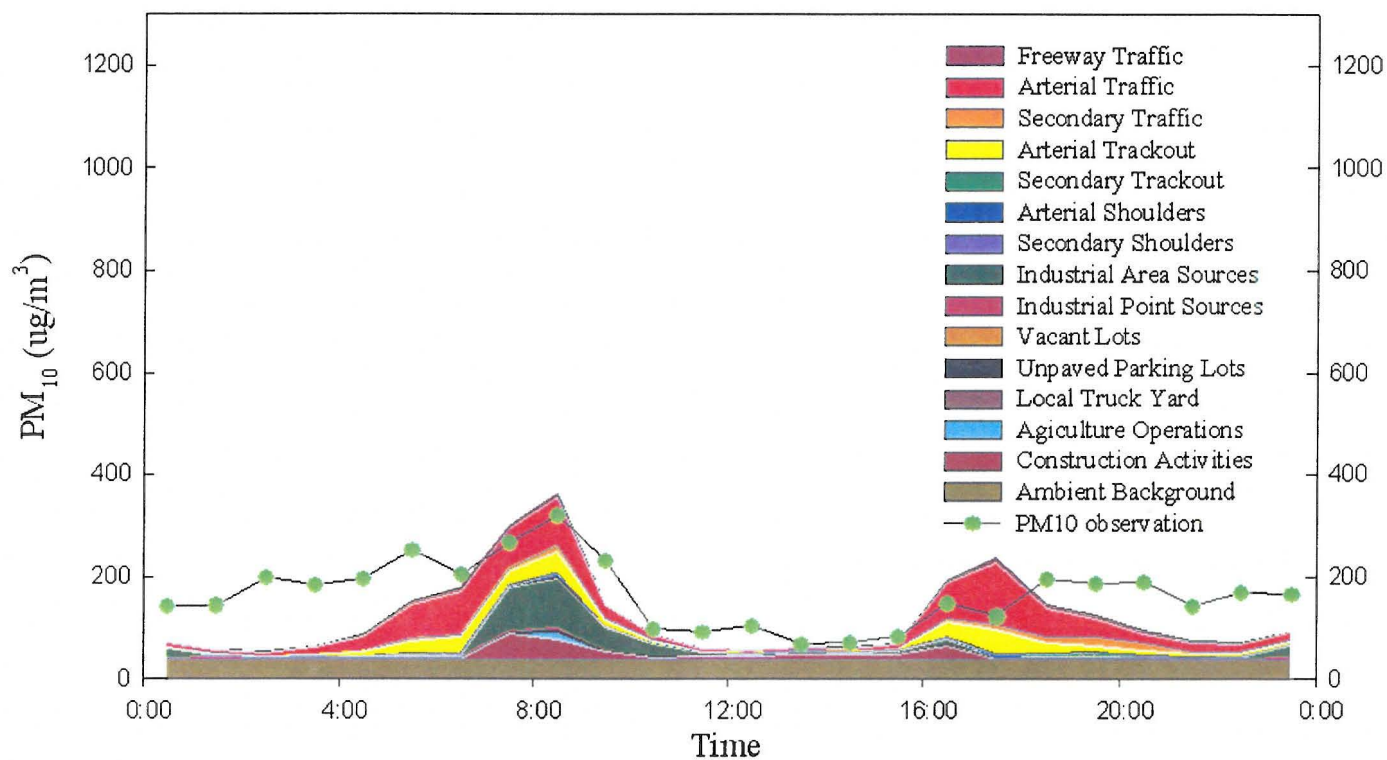


Figure 8-20
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
West 43rd Avenue (December 13, 2005)

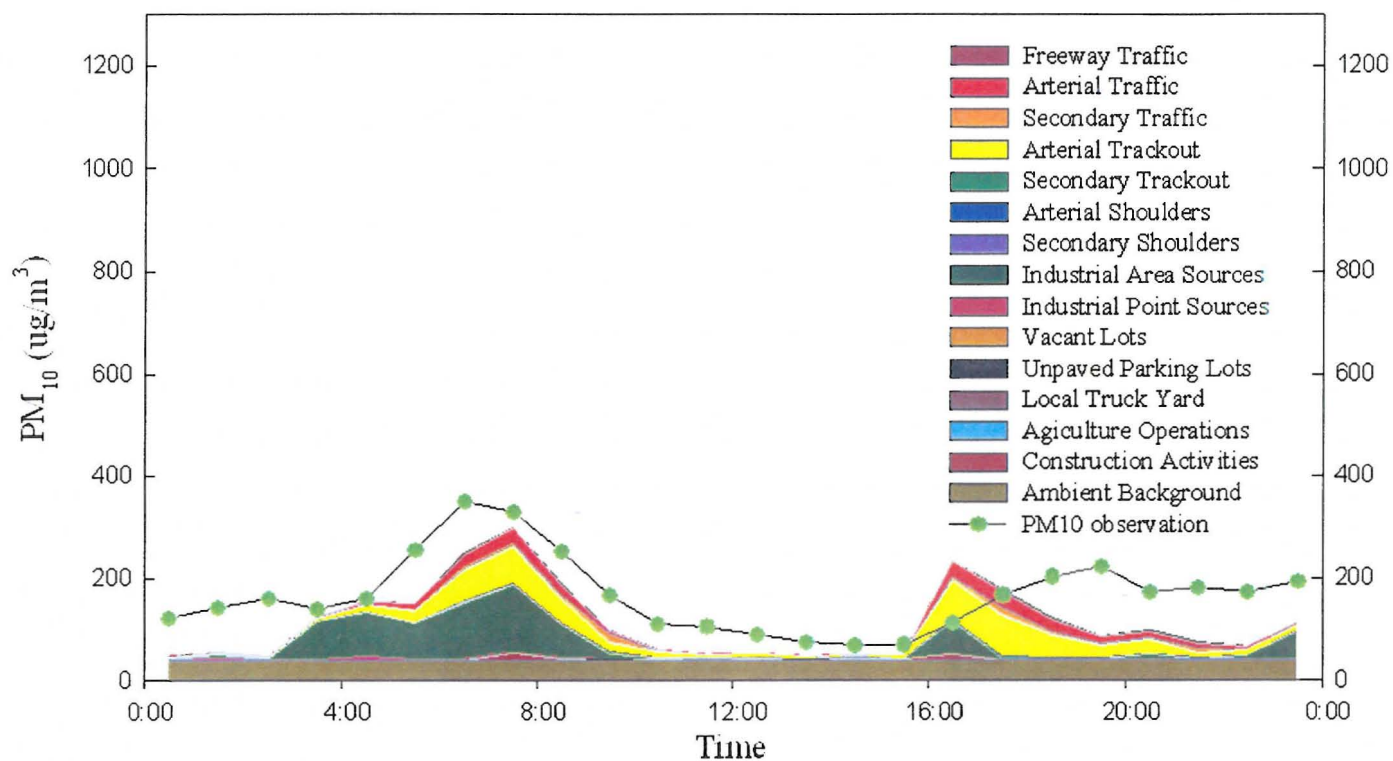


Figure 8-21
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
Durango Complex (February 15, 2006)

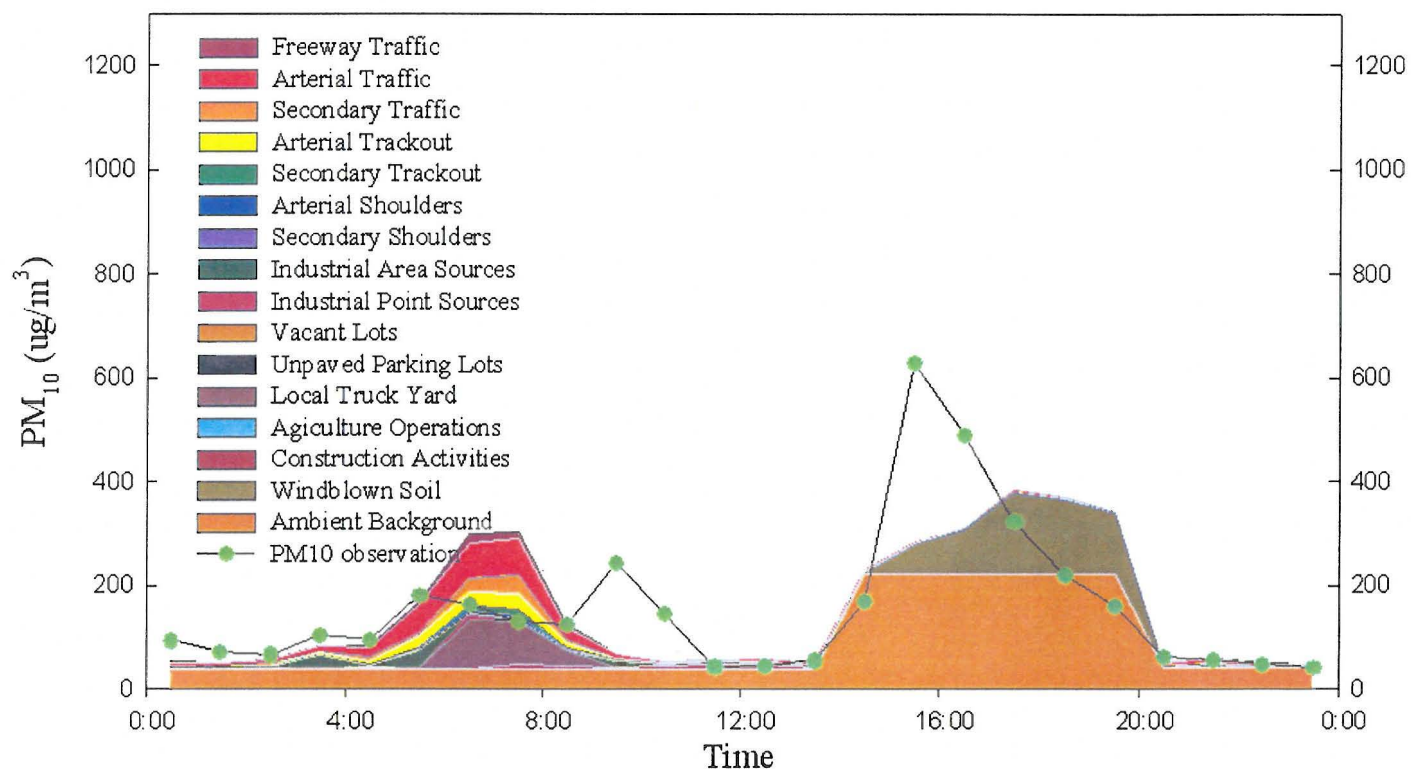
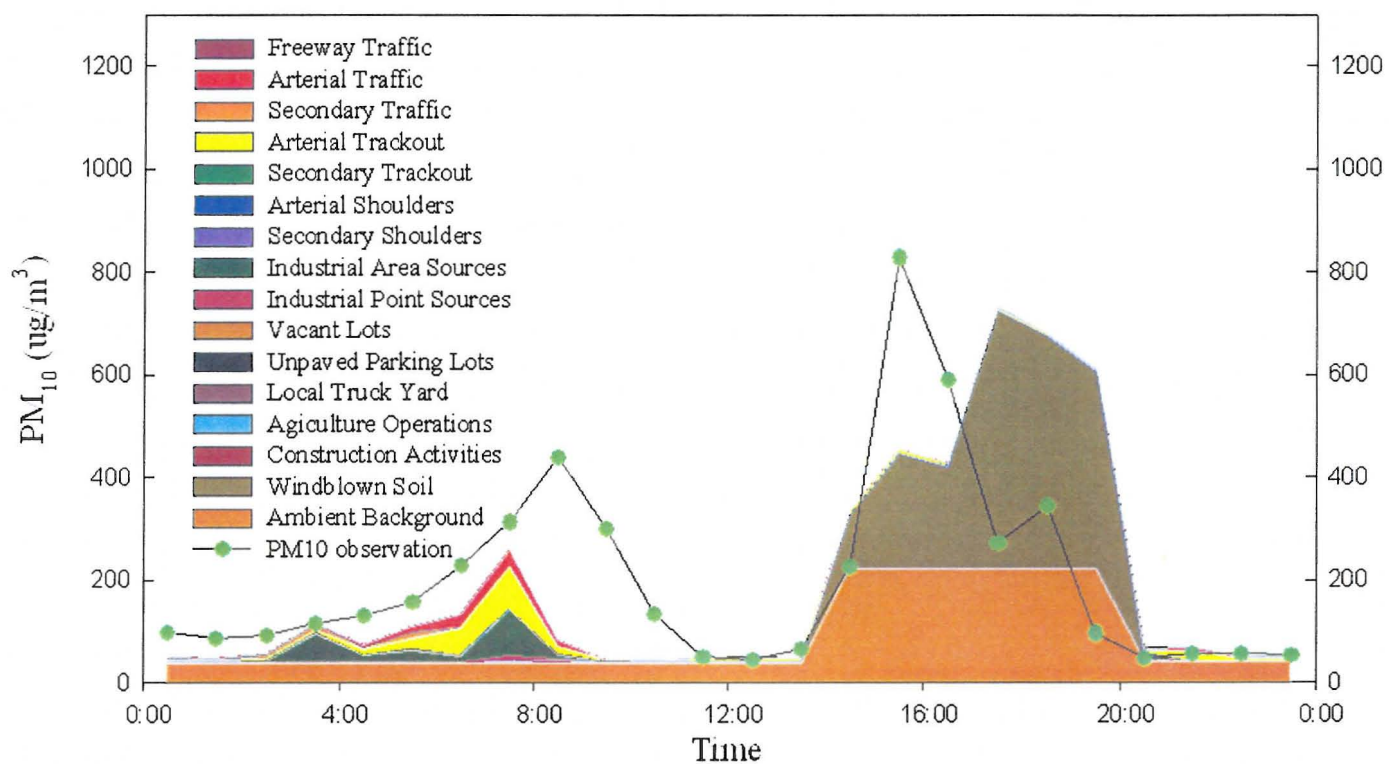


Figure 8-22
Comparison of Diurnal Distribution of Measured Concentrations
and AERMOD Predicted Source Concentrations for
West 43rd Avenue (February 15, 2006)



Control Measure Analysis

The air quality modeling performed for this plan quantified the impacts at each of the monitoring sites exceeding the 24-hour PM-10 standard in the modeling domain. Separate inventories of sources within the domain were developed for each of the low wind and high wind design days, and separate modeling runs were performed for each design day. The source-specific PM-10 impacts at each monitor were aggregated by source group for use in an analysis of control strategy benefits. Control strategy benefits were estimated from analysis of each adopted control measure and overall control efficiencies resulting from implementation of all measures were calculated for individual source categories. Detailed discussions of each of these steps are presented in Chapter Five of the TSD. A summary of the 2010 PM-10 emissions inventory produced for each of the source categories in the Salt River Area is provided in Table 8-6.

Demonstration of Attainment

Assessing the impact of the control strategies on concentrations within the Salt River Area modeling domain in 2010 requires the integration of data developed previously. First, the concentrations for the design days must be adjusted to account for expected growth between 2005/2006 and 2010. These values must then be adjusted for the benefits of new control measures that will be fully implemented in 2010, as discussed in the previous section. Each of these calculations must be performed separately for the selected monitoring locations, design days and source category. The resulting concentrations in 2010 must then be summed and contrasted with the 24-hour PM-10 standard of $150 \mu\text{g}/\text{m}^3$ to determine if attainment has been demonstrated. A similar analysis of the impact of control measures on emission inventories is required to quantify the tonnage reductions in the Salt River Area modeling domain needed to demonstrate attainment. Presented below is a summary of the results of these calculations.

A summary of the impact of the growth assumptions on 2010 predicted concentrations is presented in Tables 8-7 through 8-13. Each table chronicles the impact of growth and control assumptions on projected concentrations by source category for each of the monitors and design days. As can be seen in Table 8-7, the net effect of the growth assumptions is to increase the 2005 design value for the Durango Complex under December 12, 2005 low wind conditions from $206.9 \mu\text{g}/\text{m}^3$ to $224.0 \mu\text{g}/\text{m}^3$ in 2010; this represents an overall increase of 8.3% (including the combined growth and control of background concentrations). The impact of the growth assumptions vary because of changes in the distribution of source contributions between monitors and design days. The application of these growth factors does not account for the benefits of any new control measures. This approach assumes that the predicted 2010 values represent concentrations that would occur with the mix of control measures in place in 2005.

The final step in the analysis is to apply the control factors to the projected 2010 concentrations. Each table lists the control factors applied to each source category and

displays the concentration that results. There are considerable differences in the benefits claimed in 2010. These reductions, however, are not just the result of control measures. They also reflect trends in land development patterns (e.g., the shift of agricultural acreage to other uses, etc.) and changes observed in factors that determine emissions (e.g., reductions in silt loadings on arterial and local roads within the Salt River Area).

The AERMOD modeling indicates that the highest PM-10 concentrations that occur in 2010 under the stagnant meteorological conditions on December 12 and 13, 2005, are $141.8 \mu\text{g}/\text{m}^3$ at Bethune Elementary, $138.6 \mu\text{g}/\text{m}^3$ at Durango Complex, and $136.9 \mu\text{g}/\text{m}^3$ at West 43rd Avenue. The highest modeled PM-10 concentrations on the high wind design day of February 15, 2006 are 131.0 at Durango Complex and 145.1 at West 43rd Avenue.

Collectively, the emission reductions due to the committed control measures in the Five Percent Plan are sufficient to demonstrate that each monitor and design day in 2010 will have concentrations that fall below the 24-hour PM-10 standard of $150 \mu\text{g}/\text{m}^3$. This indicates that attainment has been demonstrated under all conditions at all monitoring locations recording exceedances within the modeling domain.

Table 8-6
Summary of Source Specific PM-10 Control Measure Reductions for
Salt River Area Modeling Domain And Design Day Conditions
In 2010

Source Category	Low Wind	High Wind
Freeway Traffic	0%	0%
Arterial Traffic	36%	36%
Secondary Traffic	36%	36%
Arterial Trackout	80%	80%
Secondary Trackout	80%	80%
Arterial Shoulders	84%	84%
Secondary Shoulders	0%	0%
Industrial Area	47%	47%
Industrial Point	47%	47%
Vacant Lots	14%	14%
Unpaved Parking Lots	14%	14%
Local Truck Yard	14%	14%
Agricultural Operations	25%	25%
Construction Activities	48%	48%
Windblown Alluvial Soil	-	50%
Windblown Soil:		
Agriculture	-	25%
Construction	-	48%
Industry	-	47%
Unpaved Parking Lots	-	37%
Vacant Lots	-	37%
Road Shoulders	-	90%
Background	5%*	15%

* Represents a combination of growth and control factors.

Table 8-7
2010 Attainment Demonstration
Low Wind Design Day (Dec. 12, 2005) Durango Complex
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	6.19	7.30	0%	7.30
Arterial Traffic	58.77	69.35	36%	44.19
Secondary Traffic	7.01	8.27	36%	5.27
Arterial Trackout	22.89	27.01	80%	5.40
Secondary Trackout	2.52	2.97	80%	0.59
Arterial Shoulders	2.94	3.46	84%	0.55
Secondary Shoulders	0.10	0.12	0%	0.12
Industrial Area	37.95	37.96	47%	20.19
Industrial Point	2.45	2.45	47%	1.30
Vacant Lots	0.03	0.03	14%	0.02
Unpaved Parking Lots	3.87	3.87	14%	3.32
Agricultural Operations	1.68	1.68	25%	1.25
Construction Activities	19.57	19.57	48%	10.13
Local Truck Yard	0.00	0.00	14%	0.00
Background	40.90	45.47	14%	38.90
Total	206.86	229.50		138.57

Table 8-8
2010 Attainment Demonstration
Low Wind Design Day (Dec. 12, 2005) West 43rd Avenue
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	2.75	3.25	0%	3.25
Arterial Traffic	34.09	40.22	36%	25.63
Secondary Traffic	16.72	19.73	36%	12.57
Arterial Trackout	51.90	61.24	80%	12.25
Secondary Trackout	6.00	7.08	80%	1.42
Arterial Shoulders	1.14	1.34	84%	0.21
Secondary Shoulders	0.26	0.31	0%	0.31
Industrial Area	60.49	60.50	47%	32.18
Industrial Point	6.41	6.41	47%	3.41
Vacant Lots	0.03	0.03	14%	0.03
Unpaved Parking Lots	0.76	0.76	14%	0.65
Agricultural Operations	0.26	0.26	25%	0.20
Construction Activities	11.39	11.39	48%	5.89
Local Truck Yard	0.00	0.00	14%	0.00
Background	40.90	45.47	14%	38.90
Total	233.09	257.97		136.90

Table 8-9
2010 Attainment Demonstration
Low Wind Design Day (Dec. 12, 2005) Bethune Elementary School
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	17.92	21.15	0%	21.15
Arterial Traffic	48.36	57.07	36%	36.37
Secondary Traffic	21.05	24.84	36%	15.83
Arterial Trackout	19.90	23.49	80%	4.70
Secondary Trackout	7.55	8.91	80%	1.78
Arterial Shoulders	0.52	0.61	84%	0.10
Secondary Shoulders	0.35	0.42	0%	0.42
Industrial Area	20.13	20.13	47%	10.71
Industrial Point	3.85	3.85	47%	2.05
Vacant Lots	0.01	0.01	14%	0.01
Unpaved Parking Lots	1.49	1.49	14%	1.28
Agricultural Operations	0.96	0.96	25%	0.72
Construction Activities	15.01	15.01	48%	7.77
Local Truck Yard	0.00	0.00	14%	0.00
Background	40.90	45.47	14%	38.90
Total	198.00	223.38		141.77

Table 8-10
2010 Attainment Demonstration
Low Wind Design Day (Dec. 13, 2005) Durango Complex
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	4.31	5.08	0%	5.08
Arterial Traffic	51.98	61.34	36%	39.09
Secondary Traffic	7.11	8.38	36%	5.34
Arterial Trackout	20.37	24.04	80%	4.81
Secondary Trackout	2.55	3.01	80%	0.60
Arterial Shoulders	2.63	3.10	84%	0.50
Secondary Shoulders	0.10	0.12	0%	0.12
Industrial Area	20.81	20.81	47%	11.08
Industrial Point	2.37	2.37	47%	1.26
Vacant Lots	0.00	0.00	14%	0.00
Unpaved Parking Lots	1.31	1.31	14%	1.13
Agricultural Operations	1.22	1.22	25%	0.91
Construction Activities	10.40	10.40	48%	5.38
Local Truck Yard	0.00	0.00	14%	0.00
Background	40.90	45.47	14%	38.90
Total	166.07	186.67		114.21

Table 8-11
2010 Attainment Demonstration
Low Wind Design Day (Dec. 13, 2005) West 43rd Avenue
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	0.94	1.11	0%	1.11
Arterial Traffic	19.34	22.82	36%	14.54
Secondary Traffic	5.67	6.70	36%	4.27
Arterial Trackout	44.27	52.24	80%	10.45
Secondary Trackout	2.04	2.40	80%	0.48
Arterial Shoulders	0.64	0.76	84%	0.12
Secondary Shoulders	0.08	0.09	0%	0.09
Industrial Area	48.72	48.72	47%	25.92
Industrial Point	2.75	2.75	47%	1.47
Vacant Lots	0.00	0.00	14%	0.00
Unpaved Parking Lots	0.05	0.05	14%	0.04
Agricultural Operations	0.14	0.14	25%	0.10
Construction Activities	2.17	2.17	48%	1.12
Local Truck Yard	0.00	0.00	14%	0.00
Background	40.90	45.47	14%	38.90
Total	167.72	185.42		98.62

Table 8-12
2010 Attainment Demonstration
High Wind Design Day (Feb. 15, 2006) Durango Complex
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	2.22	2.63	0%	2.63
Arterial Traffic	14.53	17.19	36%	10.96
Secondary Traffic	4.29	5.07	36%	3.23
Arterial Trackout	5.94	7.02	80%	1.40
Secondary Trackout	1.54	1.82	80%	0.36
Arterial Shoulders	0.90	1.06	84%	0.17
Secondary Shoulders	0.05	0.06	0%	0.06
Industrial Area	4.27	4.27	47%	2.27
Industrial Point	0.89	0.89	47%	0.47
Vacant Lots	0.03	0.03	14%	0.02
Unpaved Parking Lots	0.50	0.50	14%	0.43
Agricultural Operations	0.08	0.08	25%	0.06
Construction Activities	1.67	1.67	48%	0.87
Local Truck Yard	9.04	9.04	14%	7.76
Windblown Soil				
Agriculture	0.08	0.08	25%	0.06
Construction	1.10	1.10	48%	0.57
Industry	2.99	2.99	47%	1.59
Unpaved Parking Lots	19.66	19.66	26%	14.54
Vacant Lots	0.60	0.60	26%	0.44
Road Shoulders	0.00	0.00	84%	0.00
Alluvial	0.22	0.22	0%	0.22
Background	87.01	97.39	15%	82.91
Total	157.58	173.35		131.02

Table 8-13
2010 Attainment Demonstration
High Wind Design Day (Feb. 15, 2006) West 43rd Avenue
($\mu\text{g}/\text{m}^3$)

Source Category	2005 Normalized	2010 Prediction	Control Factor	2010 Controlled
Freeway Traffic	0.42	0.50	0%	0.50
Arterial Traffic	7.63	9.02	36%	5.75
Secondary Traffic	2.44	2.89	36%	1.84
Arterial Trackout	18.61	22.02	80%	4.40
Secondary Trackout	0.87	1.04	80%	0.21
Arterial Shoulders	0.28	0.33	84%	0.05
Secondary Shoulders	0.03	0.04	0%	0.04
Industrial Area	13.05	13.05	47%	6.91
Industrial Point	1.62	1.62	47%	0.86
Vacant Lots	0.00	0.00	14%	0.00
Unpaved Parking Lots	0.00	0.00	14%	0.00
Agricultural Operations	0.12	0.12	25%	0.09
Construction Activities	1.00	1.00	48%	0.52
Local Truck Yard	0.00	0.00	14%	0.00
Windblown Soil				
Agriculture	0.00	0.00	25%	0.00
Construction	0.66	0.66	48%	0.34
Industry	31.30	31.30	47%	16.65
Unpaved Parking Lots	0.09	0.09	26%	0.07
Vacant Lots	20.50	20.50	26%	15.16
Road Shoulders	9.32	9.32	84%	1.49
Alluvial	7.25	7.25	0%	7.25
Background	87.01	97.39	15%	82.91
Total	202.22	218.15		145.08

HIGLEY MODELING

This section describes the modeling and results for the attainment demonstration at the Higley monitor. A detailed discussion of the technical methods and assumptions used to perform the attainment demonstration is provided in Chapter VI of the TSD.

The proportional rollback model was applied to demonstrate attainment of the 24-hour PM-10 standard at the Higley monitor. During the three year period, 2004-2006, the Higley monitor exceeded the PM-10 standard on two days, October 9, 2004, with a concentration of 159 ug/m³ and January 24, 2006, with a concentration of 170 ug/m³. Since there were no more than three exceedances over three years, the Higley monitor did not violate the 24-hour PM-10 standard in 2004-2006.

The design day selected for the rollback modeling was January 24, 2006, because this was the highest value recorded at the Higley monitor in 2004-2006.¹ There were several hours on that day when wind speeds measured at the monitor exceeded 15 miles per hour.

MAG contracted with T&B Systems to conduct an analysis of monitoring data to determine an appropriate PM-10 background concentration for the rollback modeling at the Higley monitor. T&B concluded that a background concentration of 30 ug/m³ should be used in the Higley modeling for January 24, 2006. (See Appendix VI, Exhibit 1 in the TSD).

MAG developed a 2006 microscale PM-10 emissions inventory for a sixteen square kilometer area surrounding the Higley monitor. The 2006 PM-10 emissions for the Higley modeling domain were projected to 2010 based on two different land use scenarios. The first scenario reflected the changes in land uses in the modeling domain between 2006 and 2010. In the second scenario, the land uses were held constant between 2006 and 2010. The emissions reduction benefits for committed control measures described in the previous chapter were applied to demonstrate attainment for both of the Higley scenarios in 2010.

The benefits of the committed control measures in 2010 were calculated by determining the percent reduction by source category between the 2010 controlled emissions (in Table 7-3) and the 2010 base case emissions (in Table 7-2). To demonstrate attainment, the emissions reduction benefits were taken for the construction and vacant land source categories in the Higley modeling domain. Collectively, the committed control measures that increase compliance with Rule 310 (i.e., Measures #2, #3, #8, #9, #10, #16, #36-38, and #44) reduce construction emissions by 48 percent in 2010. Measures #8 and #30-33 reduce windblown dust emissions from vacant lots by 26 percent in 2010.

¹The Higley monitor exceeded the standard on four other days in 2006; however, the readings at all monitors in the PM-10 nonattainment area on these days were flagged as natural events in the EPA AQS database and do not count as exceedances.

Under scenario one, the shift from construction and agricultural land uses in 2006 to a nearly built-out condition in 2010 reduces PM-10 emissions from construction, agriculture, and nonroad equipment, while increasing paved road fugitive dust emissions. This shift in land use has already occurred to a large extent, because the freeway construction that was the largest contributor to the 2005 microscale emissions inventory was completed by mid-2006. In addition, much of the residential construction in the area, as well as the construction of a high school near the monitor, was completed in 2007.

After the land use changes and benefits for committed control measures are applied to scenario one, the PM-10 emissions in the Higley modeling domain decline from 4,581 pounds per day in 2006 to 1,071 pounds per day in 2010, a decrease of 76.6 percent. Applying this reduction to the non-background PM-10 concentrations in 2006 produces a predicted non-background concentration of 33 ug/m³ in 2010. The proportional rollback modeling results for the first Higley scenario are summarized below:

	<u>2006 Base Year</u>	<u>2010 to 2006 Emissions Ratio</u>	<u>2010 (Scenario #1)</u>
Highest PM-10 Concentration	170 ug/m ³		63 ug/m ³
Background PM-10 Concentration	30 ug/m ³		30 ug/m ³
Non-background PM-10 Concentrations	140 ug/m ³		33 ug/m ³
Total PM-10 Emissions	4,581 lbs/day	0.2339	1,071 lbs/day

The projected 24-hour PM-10 concentration at the Higley monitor for the first scenario, which represents the sources that are most likely to surround the Higley monitor in 2010, is 63 ug/m³. Since the projected PM-10 concentration is well below the standard of 150 ug/m³, the rollback modeling for this scenario concludes that the Higley monitor will attain the standard by 2010.

Under scenario two, the 2006 land uses were held constant in 2010 and the same benefits were applied for the committed control measures (i.e., 48 percent reduction for construction emissions and 26 percent reduction in vacant land emissions). The results of the proportional rollback modeling for this scenario are:

	<u>Base Year 2006</u>	<u>2010 to 2006 Emissions Ratio</u>	<u>Future Year 2010 (Scenario #2)</u>
24-hour PM-10 concentration at the Higley monitor on January 24, 2006	170 ug/m ³		115 ug/m ³
Background PM-10 concentration	30 ug/m ³		30 ug/m ³
Non-background PM-10 concentration	140 ug/m ³		85 ug/m ³
Total PM-10 emissions in the 16 square kilometer modeling domain	4,581 lbs/day	0.6105	2,797 lbs/day

The second scenario represents the construction-dominant land use that was characteristic of the area surrounding the Higley monitor in early 2006. This scenario does not reflect actual emissions that will occur near the Higley monitor in 2010, but represents the impacts of the committed control measures on similar activities that may occur in other parts of the nonattainment area in 2010. When committed control measures are applied to the

sources surrounding the Higley monitor in early 2006, the rollback modeling demonstrates attainment in 2010 with a concentration of 115 ug/m³. These modeling results indicate that other parts of the PM-10 nonattainment area that experience high levels of residential, commercial and/or road construction activity in 2010 will also meet the PM-10 standard, due to the committed control measures in the Five Percent Plan.

It is important to note that the background PM-10 concentration of 30 ug/m³ has not been reduced to demonstrate attainment in 2010 for either scenario. A comparison of Tables 7-2 and 7-3 in Chapter Seven indicates that the twenty-five committed control measures will reduce total PM-10 emissions in the PM-10 nonattainment area by 19.3 percent in 2010. These significant reductions in regional emissions would be expected to reduce background concentrations at the Higley monitor. However, to be conservative, the background concentrations have not been reduced in the rollback modeling for the Higley attainment demonstration.

DEMONSTRATION OF ATTAINMENT IN THE PM-10 NONATTAINMENT AREA

Photochemical dispersion models such as the Comprehensive Air quality Model with Extensions (CAMx) and the Community Multi-scale Air Quality model (CMAQ) are useful for modeling pollutants such as ozone that are created primarily by chemical interactions among gases. These models are capable of simulating pollutant concentrations over thousands of square miles and identifying hot-spots that may not have air quality monitors. Unfortunately, these models, even when operated in linear chemistry mode, have not proved to be as accurate in simulating PM-10 concentrations that are dominated by fugitive dust emissions.

Based on extensive air quality and meteorological measurements in the Salt River Area in November and December 2006, the MAG PM-10 Source Attribution and Deposition Study concluded that the high PM-10 concentrations under stagnant conditions are caused primarily by fugitive dust created by sources located near the monitors. Under these conditions, a Gaussian plume dispersion model such as AERMOD is a more appropriate tool than a regional dispersion model.

As discussed earlier in this chapter, AERMOD has been used to model attainment for the 29-square mile Salt River Area that contains the three monitors (Durango Complex, West 43rd Avenue and Bethune Elementary) in the PM-10 nonattainment area that violated the 24-hour PM-10 standard in 2004-2006. While AERMOD has been useful in estimating PM-10 concentrations in the Salt River Area, it would not be practical to apply AERMOD to an area as large as the entire PM-10 nonattainment area. The emissions sources and meteorological conditions for a 3,000 square mile area would be too diverse to allow for meaningful application of a single Gaussian plume model. On the other hand, applying AERMOD to multiple areas covering the entire nonattainment area would also be infeasible, due to the detailed emissions inventories and meteorological data that would be required as input to the model for each area.

As an alternative, the Five Percent Plan demonstrates attainment outside the Salt River and Higley modeling domains by applying a relative approach based on proportional rollback. There were two other monitors in the PM-10 nonattainment area that exceeded the 24-hour PM-10 standard during the period 2004-2006. These monitors did not violate the standard, because they each had only one exceedance in three years. Both monitors exceeded the standard on the same day, December 12, 2005, which is also one of the stagnant days modeled with AERMOD for the Salt River Area. The PM-10 concentrations at these two monitors on December 12, 2005 were:

<u>Monitor</u>	<u>PM-10 Concentration on 12/12/05</u>
Greenwood	172.7 ug/m ³
West Phoenix	155.0 ug/m ³

It is reasonable to assume that the background concentration for these two monitors on December 12, 2005 would be no higher than the background used for the same day in the attainment demonstration for the Salt River Area. As discussed in the Salt River Area Modeling section of this chapter, the background value of 40.9 ug/m³ was derived from data collected on December 6 and 7, 2006 by the PM-10 Source Attribution and Deposition Study; the anthropogenic portion of this background concentration was determined to be 78.4 percent or 32.1 ug/m³.

A comparison of Tables 7-2 and 7-3 indicates that the committed control measures in the Five Percent Plan will reduce total PM-10 emissions in the nonattainment area by 19.3 percent in 2010. These measures apply to sources that are distributed throughout the nonattainment area. S.B. 1552 requires many of these measures to apply to Area A, which is significantly larger than the PM-10 nonattainment area. Applying the 19.3 percent reduction in nonattainment area emissions to the anthropogenic portion of the background (i.e., 32.1 ug/m³) reduces the background PM-10 concentration by 6.2 ug/m³, from 40.9 in 2005 to 34.7 ug/m³ in 2010. This reduced background is used in the rollback modeling to demonstrate attainment at the Greenwood and West Phoenix monitors, as discussed below.

Greenwood Attainment Demonstration

The Greenwood monitor is located in an established urban neighborhood adjacent to a freeway (see Figure 8-23). The primary source of emissions in a fully-developed urban area near a freeway, as demonstrated in scenario one for the Higley modeling, is paved road fugitive dust. The paved road emissions for a 16-square kilometer area surrounding the Greenwood monitor were quantified using AP-42 emissions rates applied to VMT for the 4 km x 4 km square centered on the Greenwood monitor. The VMTs were derived from MAG EMME/2 traffic assignments for 2007 and 2010 and represent annual average daily traffic. GIS was utilized to extract the VMT for the Greenwood modeling area.

Figure 8-23. Greenwood Modeling Area



The AP-42 emissions rates for paved roads are 1.70 grams per mile for low volume arterials (<10,000 average daily traffic), 0.65 grams per mile for other arterials, and 0.18 grams per mile for freeways. The assumptions used in developing the AP-42 emissions rates are described in the section on Reentrained Dust from Paved Roads in Chapter II of the TSD. Application of the paved road emissions rates to the VMT for the Greenwood modeling area results in the paved road PM-10 emissions shown below.

VMT and Paved Road Emissions in a 4 km x 4 km Area Around the Greenwood Monitor

	2007		2010	
	Daily VMT	Emissions (kg/day)	Daily VMT	Emissions (kg/day)
Low Volume Arterials	93,583	159.1	95,473	162.3
Other Arterials	397,062	258.1	440,755	286.5
Freeways	954,607	171.8	989,557	178.1
Total Uncontrolled PM-10 Emissions		589.0		626.9

The 2005 paved road PM-10 emissions for the Greenwood area were derived by linear extrapolation of the 2007 and 2010 PM-10 emissions above. The results are shown below:

Uncontrolled Paved Road PM-10 Emissions (kg/day)	<u>2005</u>	<u>2010</u>
Arterials	396.1	448.8
Freeways	167.6	178.1
Total	563.7	626.9

For this rollback analysis, it was assumed that paved road emissions represent 73 percent of the total 2005 PM-10 emissions in the Greenwood area. This is consistent with the contribution of paved roads to the emissions inventory for the Salt River Area on December 12, 2005. The non-paved road emissions are held constant between 2005 and 2010. This is a reasonable assumption since the area is fully developed and the land use patterns are unlikely to change sufficiently to increase PM-10 emissions from other sources. The resultant uncontrolled emissions for arterials, freeways, and other sources in the Greenwood area are shown below:

Uncontrolled PM-10 emissions (kg/day)	<u>2005</u>	<u>2010</u>
Paved road emissions on arterials	396.1	448.8
Paved road emissions on freeways	167.6	178.1
Emissions from other sources	<u>208.5</u>	<u>208.5</u>
Total uncontrolled PM-10 emissions (kg/day)	772.2	835.4

The Salt River Area modeling discussed previously in this chapter indicates that emissions on arterials will decline by 36 percent in 2010 due to the increased enforcement of Rule 310, Rule 310.01 and Rule 316, that will reduce paved road emissions created by both permitted and non-permitted sources. Since the Greenwood monitor is located within one mile of the Salt River Area and many of the trucks leaving the Salt River Area travel through the Greenwood area to access the I-10 freeway, it is reasonable to assume that the Greenwood area will also benefit from a 36 percent reduction in emissions on arterials. Applying a 36 percent reduction to the 2010 paved road emissions on arterials produces the following 2010 PM-10 emissions:

	<u>2005</u>	<u>2010</u>
Emissions from Arterials (kg/day)	396.1	287.2
Emissions from Freeways (kg/day)	167.6	178.1
Emissions from Other Sources (kg/day)	<u>208.5</u>	<u>208.5</u>
Total PM-10 Emissions (kg/day)	772.2	673.8

Applying the reduction in total emissions of 12.7 percent between 2005 and 2010 to the non-background concentration in 2005 and applying a 19.3 percent reduction to the 2005 background concentration due to the combined impact of the 25 committed control measures produces a 2010 peak PM-10 concentration in the Greenwood area of 149.8 ug/m3 as shown below.

<u>Rollback Modeling for the Greenwood Area</u>	<u>2005</u>	<u>2010</u>
Peak PM-10 Concentration (ug/m3)	172.7	149.8
Background Concentration (ug/m3)	40.9	34.7
Non-background Concentration (ug/m3)	131.8	115.1

Using the simplified rollback approach results in peak PM-10 concentrations at the Greenwood monitor that are less than 150 ug/m3 in 2010. Therefore, the Greenwood monitor will attain the standard in 2010 due to the committed control measures in the Five Percent Plan. The rollback analysis represents a very conservative estimate of future PM-10 concentrations in the Greenwood area, since there are many other committed control measures in the Five Percent Plan that will reduce PM-10 emissions from sources other than paved roads (e.g., vacant lots and unpaved parking areas.)

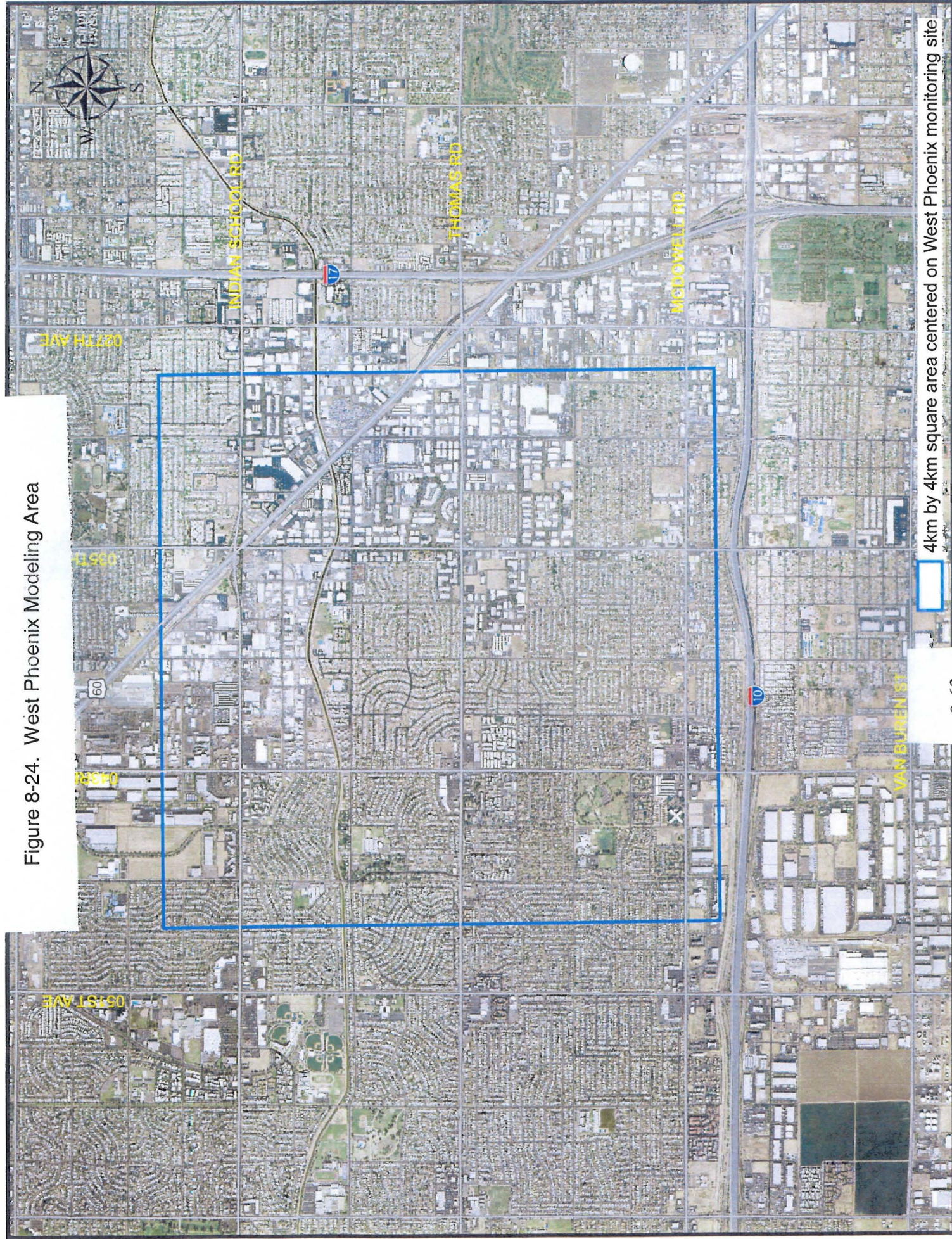
West Phoenix Attainment Demonstration

The West Phoenix monitor is also located in an established urban neighborhood, as shown in Figure 8-24. The primary source of emissions in a fully-developed urban area, as demonstrated in scenario one for the Higley modeling, is paved road fugitive dust. The paved road emissions for a 16-square kilometer area surrounding the West Phoenix monitor were quantified, using AP-42 emissions rates applied to vehicle miles of travel (VMT) for the 4 km x 4 km square centered on the West Phoenix monitor. The VMTs were derived from MAG EMME/2 traffic assignments for 2007 and 2010 and represent annual average daily traffic. The AP-42 emissions rates for paved roads were the same as used in the Greenwood modeling.

VMT and Paved Road Emissions in a 4 km x 4 km Area Around the West Phoenix Monitor

	2007		2010	
	Daily VMT	Emissions (kg/day)	Daily VMT	Emissions (kg/day)
Low Volume Arterials	113,816	193.5	115,571	196.5
Other Arterials	489,056	<u>317.9</u>	516,781	<u>335.9</u>
Uncontrolled PM-10 Emissions		511.4		532.4

Figure 8-24. West Phoenix Modeling Area



The 2005 paved road PM-10 emissions for the West Phoenix area were derived by linear extrapolation of the 2007 and 2010 PM-10 emissions. The results are shown below:

Uncontrolled Paved Road PM-10 Emissions (kg/day) from Arterials	<u>2005</u> 497.4	<u>2010</u> 532.4
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For this simplified rollback analysis, it was assumed that paved road emissions in 2005 represent 73 percent of the total PM-10 emissions in the West Phoenix area, based on the emissions inventory for the Salt River Area modeling on December 12, 2005. The non-paved road emissions are held constant between 2005 and 2010. This is a reasonable assumption since the area is fully developed and the land use patterns are unlikely to change sufficiently to increase PM-10 emissions from other sources. The resultant uncontrolled emissions for arterials and other sources in the West Phoenix area are shown below:

Uncontrolled PM-10 emissions (kg/day)	<u>2005</u>	<u>2010</u>
Paved road emissions on arterials	497.4	532.4
Emissions from other sources	<u>184.0</u>	<u>184.0</u>
Total uncontrolled PM-10 emissions (kg/day)	681.4	716.4

Applying the 5.1 percent increase in PM-10 emissions to the non-background concentrations in 2005, and a 19.3 percent decrease in 2005 background concentrations due to the cumulative impact of the committed control measures in the Five Percent Plan, produces the following estimate for the peak PM-10 concentration in 2010:

<u>West Phoenix Area</u>	<u>2005</u>	<u>2010</u>
Peak PM-10 Concentration (ug/m3)	155.0	154.6
Background Concentration (ug/m3)	40.9	34.7
Non-background Concentration (ug/m3)	114.1	119.9

The 24-hour standard for PM-10 is 150 ug/m3. However, to allow for rounding, EPA considers monitored 24-hour PM-10 concentrations of 155 ug/m3 or greater to be exceedances of the standard. Therefore, the peak PM-10 concentration in 2010 shown above is not an exceedance and the West Phoenix monitor would be in attainment of the standard in 2010 due to the cumulative impact of the committed control measures on background concentrations.

The rollback analysis represents a very conservative estimate of future PM-10 concentrations in the West Phoenix area, since there are many other committed control measures in the Five Percent Plan that will reduce PM-10 emissions from sources other than paved roads (e.g., vacant lots and unpaved parking areas.)

REASONABLE FURTHER PROGRESS

Section 189(c) of the Clean Air Act establishes a requirement that the plan include quantitative milestones that are to be achieved every three years until the area is redesignated attainment and which demonstrate reasonable further progress toward

attainment by the applicable date. Section 171(1) of the Clean Air Act defines reasonable further progress as annual incremental reductions in emissions for the purpose of ensuring attainment by the applicable date.

For the Five Percent Plan, the applicable attainment date is December 31, 2010. The plan provides fifty-three committed measures that will effect major reductions in emissions and concentrations in the PM-10 nonattainment area in 2008, 2009 and 2010. Since the plan is being submitted in December 2007 and attainment is defined as no monitored violations for three consecutive years (i.e., 2008, 2009, and 2010), the earliest attainment date that can be achieved by this plan is 2010.

According to the General Preamble, nonattainment area plans must include quantitative milestones which are to be achieved every three years until the area is redesignated to attainment. The quantitative milestones allow progress to be measured. Specifically, air quality plans should identify and submit quantitative milestones providing for the amount of emission reductions adequate to achieve the standard by the attainment date. The milestone date analyzed in this plan is 2010. The modeling for the Salt River Area and the Higley monitor have shown that the emissions reductions due to committed control measures are adequate to achieve attainment by 2010. The requirement for a 2010 milestone has been addressed by quantifying the emission reductions resulting from the implementation of the committed control measures in the PM-10 nonattainment area. As shown in Table 7-1, the milestone PM-10 emissions reduction needed to achieve attainment in 2010 is 19,840 tons.

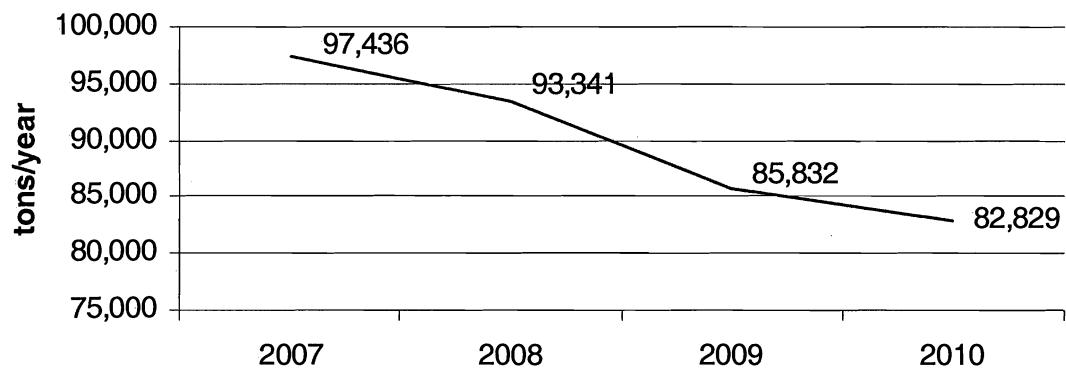
The annual incremental reductions that show reasonable further progress (RFP) between 2007 and 2010 are graphed in Figure 8-25. The RFP line represents total emissions in the PM-10 nonattainment area after credit is applied for the committed control measures that are described in Chapter Seven. The RFP requirement is met by showing incremental emissions reductions sufficient generally to maintain linear progress towards attainment. The annual emissions in Figure 8-25 show a downward linear trend. The slope of the line becomes steeper after 2008, because many of the control measures go into effect during 2008 and only partial credit for these measures was taken in 2008. Figure 8-25 demonstrates that RFP will be achieved between 2007 and the attainment date of 2010 due to the implementation of the committed control measures that have been quantified.

CONTINGENCY MEASURES

Twenty-five committed measures have been quantified to meet the five percent requirement, demonstrate modeled attainment, and show RFP. Additional measures beyond the committed control measures described in Chapter Seven are needed to meet the contingency requirements of the Clean Air Act.

Section 172(c)(9) of the Clean Air Act requires that nonattainment plans contain contingency measures. Such measures are to be undertaken without further action by the

Figure 8-25
PM-10 Emissions with Committed Control Measures -
Reasonable Further Progress



State or the EPA Administrator if the area fails to make reasonable further progress or meet the standard by the attainment date.

The contingency measures are committed measures in the adopted Five Percent Plan that achieve emissions reductions beyond those measures relied upon for progress (five percent reductions, milestones, and reasonable further progress) and attainment of the standard. Committed measures may be contingency measures if they are not needed to show attainment and do not hasten attainment. Although there is no mandated emissions reduction level, EPA has recommended that contingency measures provide the emissions reduction equivalent of one year's average increment of RFP.

Figure 8-25 indicates that the total controlled PM-10 emissions in the nonattainment area are 97,436 tons in 2007 and 82,829 tons in 2010. Subtracting these values and dividing by three years produces an average annual emissions reduction of 4,869 tons. Therefore, contingency measures that reduce total PM-10 emissions by 4,869 tons per year must be quantified to meet the EPA guideline.

The emissions reductions quantified for the individual contingency measures are discussed in the sections below. The results are summarized in Table 8-14. The total emissions reductions for the contingency measures are 5,223 tons in 2008, 7,213 tons in 2009, and 9,159 tons in 2010. In each year, the benefits of the contingency measures exceed one year of RFP or 4,869 tons.

The committed contingency measures are not necessary to meet the five percent requirement, demonstrate modeled attainment, or show reasonable further progress. In addition, implementation of the contingency measures will not hasten attainment by one year. As discussed in the previous section, the earliest attainment date that can be achieved by this plan is 2010. The plan includes committed control measures that effect the emissions reductions necessary to reduce PM-10 emissions and concentrations in 2008, 2009 and 2010. The committed control measures implemented in 2008-2010 will produce the three years of clean data at all monitors necessary to attain the standard as expeditiously as practicable which is 2010.

In general, committed measures were considered to be suitable as contingency measures if they were not needed to demonstrate modeled attainment. A detailed discussion of the methods and assumptions used in quantifying these contingency measures is provided in Chapter IV of the TSD. The individual contingency measures and a summary of the attendant emissions reductions are presented below.

Measure #1 - Public Education and Outreach with Assistance from Local Governments

The media campaign for "Bring Back Blue" was initiated by Maricopa County in January 2007. Based on the sources targeted in the "Bring Back Blue" campaign, it is anticipated that this measure will reduce PM-10 emissions from the following source categories:

Table 8-14. Summary of PM-10 Emissions Reductions for Contingency Measures

Contingency Measures		PM-10 Reductions (tons/yr)		
#	Measure Title	2008	2009	2010
1	Public education and outreach program	47.6	47.5	48.5
5	Certification program for dust free developments	28.9	21.5	17.6
19	Reduce offroad vehicle use	140.3	174.6	179.1
24	Sweep streets with PM-10 certified sweepers	1,027.7	1,563.1	2,129.2
26	Pave or stabilize existing public dirt roads and alleys	1,488.0	2,313.3	3,723.6
27	Limit speeds to 15 mph on high traffic dirt roads	390.4	390.2	390.2
43	Additional \$5M in FY07 MAG TIP for paving roads/shoulders	205.2	820.9	820.9
50	Agricultural Best Management Practices	637.6	608.0	579.7
Multiple	Reduce trackout onto paved roads	1,256.9	1,273.4	1,270.0
Total for All Quantified Contingency Measures		5,222.5	7,212.6	9,158.9
Contingency Measure Reduction Target (tons/year)		4,869	4,869	4,869

windblown vacant land, unpaved parking areas, leaf blower dust, offroad recreational vehicles, fugitive dust from paved and unpaved roads, and exhaust, tire and brake wear emissions. Due to the assistance and reinforcement provided in local government commitments to this measure, the benefit is expected to be a 0.10 percent reduction in the total emissions for the impacted source categories in 2008 through 2010. This results in the following reduction in PM-10 emissions:

	2008	2009	2010
Total reductions due to Measure #1 (tons/year)	48	48	49

Measure #5 - Establish a Certification Program for Dust Free Developments to Serve as an Industry Standard

SB 1552 requires that ADEQ establish a dust-free development program with voluntary certification process by September 19, 2007. This program will reduce construction emissions by showcasing developments that practice higher standards for controlling dust before, during and after construction. Due to the example shown by this program, total construction emissions are anticipated to decline by 0.10% in 2008-2010. The results are shown below:

	2008	2009	2010
Total reductions due to Measure #5 (tons/year)	29	22	18

Measure #19 - Reduce Off-road Vehicle Use in Areas with High Off-road Vehicle Activity

The City of Goodyear revised its municipal code on February 13, 2006 to prohibit the operation of vehicles on private land without the written permission of the landowner. Goodyear has submitted this change in city code as a commitment in the Five Percent Plan. The reduction in off-road vehicle emissions attributable to this commitment is assumed to be proportional to the acres of non-state-owned land in Goodyear that are passive open space or vacant versus the comparable acreage in the PM-10 nonattainment area.

In addition to the Goodyear commitment, Measure #19 takes credit for the requirement in SB 1552 that cities and towns in Area A develop and enforce ordinances prohibiting the use of vehicles on unpaved surfaces closed by the landowner. The law requires that the ordinances be adopted and implemented by March 31, 2008.

During the deliberations on SB 1552, the legislature was informed by the Arizona Department of Environmental Quality (ADEQ) that the new municipal ordinances would reduce off-road recreational vehicle use in the PM-10 nonattainment area by 7.5 percent with a 70 percent compliance rate. This benefit was applied after the reductions due to the

Goodyear ordinance. The benefit was reduced by 25 percent in 2008 to reflect the March 31, 2008 implementation date for the ordinances.

SB 1552 also requires educational materials to be prepared by ADEQ and provided to buyers and renters of ORVs. No additional credit is taken for this educational outreach program to be implemented by ADEQ by September 19, 2007.

	2007	2008	2009	2010
Total reductions due to Measure #19 (tons/year)	50	140	175	179

Measure #24 - Sweep Streets with PM-10 Certified Street Sweepers

Emission reduction credit for Measure #24 represents the sum of the benefits from three different sets of sources: (1) commitments made by three cities, one town, and the Arizona Department of Transportation, (2) a SB 1552 requirement that contractors sweeping city streets use PM-10 certified units, and (3) funding programmed for 31 street sweepers in fiscal years 2007, 2008, and 2009 in the MAG Transportation Improvement Program (TIP).

(1) Commitments to increase the use of PM-10 certified street sweepers were received from Goodyear, Paradise Valley, Peoria and Tempe.

The City of Goodyear commits to require construction contractors to use PM-10 sweepers when building permits are issued and leased sweeping on city parking lots to use PM-10 certified units.

The Town of Paradise Valley commits to mandate that developers use PM-10 sweepers pursuant to the grading and drainage permit.

The City of Peoria commits to require that city maintenance contractors use PM-10 certified sweepers by July 2007. The City will also require developers to use PM-10 certified sweepers pursuant to the grading and drainage permit.

The City of Tempe commits to pursue a requirement for PM-10 certified units in city construction contracts.

These commitments are assumed to reduce paved road PM-10 emissions by five percent in the four jurisdictions. These four jurisdictions have 12 percent of the vehicle miles of travel (VMT) in the PM-10 nonattainment area in 2008-2010 and therefore, were assumed to have 12 percent of the paved road emissions in these years.

In addition, the Arizona Department of Transportation (ADOT) committed to require the contractor sweeping state highways in the PM-10 nonattainment area to use PM-10 certified units. ADOT indicated that the contractor is currently using PM-10 certified units for 80 percent of the sweeping in the PM-10 nonattainment area. In the sweeping contract

to be awarded on January 19, 2008, ADOT will require the use of PM-10 certified units for 100 percent of the sweeping in the PM-10 nonattainment area.

ADOT provided data on the annual curb miles of freeways and arterials swept and the sweeping frequencies. MAG estimated the annual average daily traffic (AADT) per lane mile using recent traffic count data for freeways, U.S. 60 (Grand Avenue). and SR 87.

(2) SB 1552 requires contractors sweeping city streets in Area A to use PM-10 certified sweepers. The law requires this measure to be implemented by cities, towns and counties in Area A by March 31, 2008. It is assumed that this requirement in state law will reduce paved road PM-10 emissions in the PM-10 nonattainment area by an additional one percent. This reduction is calculated on the basis of the net paved road emissions after the reductions attributed to the sweeping commitments in (1) above.

(3) The FY 2007-2011 MAG Transportation Improvement Program (TIP) included \$1.44 million in Congestion Mitigation and Air Quality Improvement (CMAQ) funds to purchase PM-10 certified street sweepers in FY 2007. The FY 2008-2010 TIP included \$1.11 million in CMAQ funds for purchasing PM-10 sweepers in FY 2008 and \$1.21 million, in FY 2009. Each year, MAG solicits requests from local governments to purchase PM-10 certified street sweepers to replace non-certified units, increase the frequency of sweeping, and expand the area swept in the PM-10 nonattainment area. The local governments are required to provide a match of at least 5.7 percent of the cost of each sweeper funded with CMAQ funds. Based on the programmed funding for PM-10 certified sweepers in FY 2007-2009 of \$3.76 million and an average CMAQ funding level of \$120,000 per sweeper, it is anticipated that 31 additional PM-10 certified sweepers will be purchased during this three-year period. This is a conservative estimate, as CMAQ funds may become available at the end of the fiscal year to buy additional sweepers that were not funded initially. There were 103 PM-10 certified sweepers purchased with CMAQ funds in FY 2001-2006, which represents an average of 17 per year.

For the 103 sweepers purchased with CMAQ funds in FY 2001-2006, data on sweeping frequency, lane miles swept, and average weekday traffic per lane mile swept was provided to MAG by the jurisdiction requesting funds to purchase a PM-10 certified sweeper. The agency also identified the functions for the new PM-10 certified sweeper being requested (i.e., replace non-certified sweeper, increase sweeping frequency, and/or expand the area swept). If the sweeping frequency or area was to be increased, the agency provided the frequencies and lane miles to be swept before and after deployment of the new sweeper. Data provided by the requesting agencies was applied to the PM-10 emission rates shown above to calculate the average PM-10 emissions reduction for the 103 sweepers that were purchased with CMAQ funds in FY 2001-2006. The average PM-10 emissions reduction was 162.69 kilograms per day for each PM-10 certified street sweeper. This average daily reduction was applied to calculate the credit for the 31 additional sweepers to be purchased in FY 2007-2009.

The total reduction in PM-10 emissions due to Measure #24 is the sum of the reductions from the sources described in (1), (2) and (3) above.

	2008	2009	2010
Total reductions due to Measure #24 (tons/year)	1,028	1,563	2,129

Measure #26 - Pave or stabilize existing public dirt roads and alleys

Maricopa County and eleven cities and towns made commitments to pave or stabilize unpaved roads and alleys in the PM-10 nonattainment area. The centerline miles of unpaved roads and alleys to be paved and stabilized are summarized below. The miles are accumulated in successive years.

Centerline Miles of Roads and Alleys to be Paved or Stabilized				
Type of Commitment	2007	2008	2009	2010
Total Paved	9.3	64.4	103.6	113.7
Total Stabilized	130.0	146.2	156.3	161.3
Total Paved and Stabilized	139.3	210.6	259.9	275.0

In addition, SB 1552 requires that cities, towns, and counties in Area A develop and implement plans to stabilize unpaved roads and alleys. The plans are to give priority to stabilizing unpaved roads carrying more than 100 daily vehicle trips (high ADT) and must be developed and implemented by January 1, 2008.

Nine jurisdictions have committed to stabilize 161 miles of unpaved roads and alleys by 2010. It is reasonable to assume that the plans required by SB 1552 will result in at least 30 additional miles of high ADT unpaved roads being treated with dust suppressants. Since the plans must be implemented by January 1, 2008, the credit for stabilizing 30 miles of unpaved roads begins in 2008.

Six jurisdictions have committed to pave 114 miles of unpaved roads and alleys by 2010. It is reasonable to assume that the plans required by SB 1552 will result in the paving of at least 30 additional miles of high ADT unpaved roads. Credit for paving the unpaved roads is not taken until 2010 in order to allow two years for engineering and construction.

The total reduction in PM-10 emissions due to Measure #26 is the sum of the reductions due to the commitments by the twelve jurisdictions and the additional SB 1552 requirement to implement plans to stabilize unpaved roads and alleys. The 2007 reductions are included in the controlled 2007 emissions. The reductions in 2008-2010 are applied to meet the contingency measure requirement.

	2007	2008	2009	2010
Total reductions due to Measure #26 (tons/year)	779	1,488	2,313	3,724

Measure #27 - Limit speeds to 15 miles per hour on high traffic dirt roads

Four jurisdictions made commitments to reduced speed limits on unpaved roads: Chandler, Maricopa County, Scottsdale and Youngtown. The reductions in PM-10 emissions are summarized below. The 2007 reductions are included in the controlled 2007 emissions. The reductions in 2008-2010 are applied to meet the contingency measure requirement.

	2007	2008	2009	2010
Total reductions due to Measure #27 (tons/year)	1	390	390	390

Measure #43 - MAG Allocate Additional \$5 Million in FY 2007 Federal Funds for Paving Dirt Roads and Shoulders

In July 2007, the MAG Regional Council approved an additional \$5 million in FY 2007 federal funds to be programmed in the FY 2007-2011 Transportation Improvement Program for paving unpaved roads and shoulders. At the same meeting, the MAG Regional Council also approved nine paving projects to be funded with the additional \$5 million. The federal funds are to be matched on a 50/50 basis by the MAG member agency that submitted the project. The nine projects will pave 15.3 miles of unpaved roads and 45.44 miles of unpaved shoulders. Although the projects are funded in FY 2007, only 25 percent of the credit is taken in 2008, in order to allow sufficient time for engineering and construction. The reductions in PM-10 emissions due the nine funded projects are shown below.

	2008	2009	2010
Reductions due to Measure #43 (tons/year)	205	821	821

Measure #50 - Require Two Agricultural Best Management Practices

SB 1552 requires that the Agricultural Best Management Practices (BMPs) be expanded from one to two and the area in which the BMPs apply be expanded from the PM-10 nonattainment area to Area A. No credit is taken for the expansion to Area A, because the emissions for the Five Percent Plan represents the PM-10 nonattainment area. It was assumed that the benefit of the second set of BMPs for the three categories (i.e., tilling and harvesting, cropland, and non-cropland) would be at least as effective in reducing PM-10 emissions as the first set of BMPs.

The percentage reductions for application of BMPs to tilling and harvesting and unpaved farm roads were derived from the MCAQD, 2005 Periodic Emissions Inventory for PM-10 (PEI). The control efficiency for the BMP applied to cropland was derived from Table 4-2 of the URS and ERG, Technical Support Document for Quantification of Agricultural Best Management Practices, June 2001. However, the compliance rate of 80 percent assumed for cropland BMPs in the URS/ERG report was reduced to 59 percent to be consistent with

the rule effectiveness study for the agricultural BMPs contained in the PEI. The percentage and emissions reductions for each agricultural source category are shown in the table below.

	(tons/yr)		
Reductions by source category (% reduction)	2008	2009	2010
Tilling & Harvesting (21.3%)	238	227	217
Unpaved Farm Roads (12.8%)	100	95	91
Windblown Agriculture (30.1%)	299	286	272
Total reductions due to Measure #50 (tons/year)	638	608	580

Reduce Trackout onto Paved Roads

Credit for reducing trackout emissions is attributable to three committed measures in the Five Percent Plan. In addition to reducing PM-10 emissions at the source (i.e., construction sites, sand and gravel operations, unpaved parking lots, vacant lots), the following measures will reduce trackout onto paved roads in the PM-10 nonattainment area:

- Measure #14. Reduce dragout and trackout emissions from nonpermitted sources
- Measure #15. Cover loads/haul trucks in Apache Junction
- Measure #17. Fully implement Rule 316

No emissions reduction credit has been quantified previously for these measures. Measure #14 will be especially significant in reducing trackout emissions. As discussed under Measure #28 in Chapter Seven, the average PM-10 emission rate for paved roads with high trackout was developed from data collected by the MAG Silt Loading Study.

Due to the collective impact of Measures #14, #15 and #17, trackout emissions in the PM-10 nonattainment area are expected to decline by 15 percent in 2008-2010.

	2008	2009	2010
Total reductions due to Measures #14; #15; #17 (tons/year)	1,257	1,273	1,270

ONROAD MOBILE SOURCE EMISSIONS BUDGET FOR CONFORMITY

In accordance with the 1990 Clean Air Act Amendments, conformity requirements are intended to ensure that transportation activities do not result in air quality degradation. Section 176 of the Amendments requires that transportation plans, programs, and projects conform to applicable air quality plans before the transportation action is approved by a Metropolitan Planning Organization (MPO). The designated MPO for the Maricopa area is MAG.

Section 176(c) of CAAA provides the framework for ensuring that Federal actions conform to air quality plans under section 110. Conformity to an implementation plan means that proposed activities must not (1) cause or contribute to any new violation of any standard in any area, (2) increase the frequency or severity of any existing violation of any standard in any area, or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

EPA transportation conformity regulations establish criteria involving comparison of projected transportation plan emissions with the motor vehicle emissions assumed in applicable air quality plans. The regulations define the term “motor vehicle emissions budget” as meaning “the portion of the total allowable emissions defined in a revision of the applicable implementation plan (or in an implementation plan revision which was endorsed by the Governor or his or her designee) for a certain date for the purpose of meeting reasonable further progress milestones or attainment or maintenance demonstrations, for any criteria pollutant or its precursors, allocated by the applicable implementation plan to highway and transit vehicles.”

On June 25, 2002, EPA approved the Revised MAG 1999 Serious Area Particulate Plan for PM-10 in the Maricopa County Nonattainment Area, including the transportation conformity budget for the attainment year of 2006. The 2006 onroad mobile source emissions budget established by the Plan for PM-10 was 59.7 metric tons per day. The PM-10 emissions in the conformity budget included reentrained dust from paved roads, vehicle exhaust, travel on unpaved roads, and road construction.

The MAG 2007 Five Percent Plan establishes a transportation conformity budget based on the controlled emissions in the PM-10 nonattainment area for the attainment year of 2010. The PM-10 emissions with committed control measures that meet the five percent requirement, demonstrate modeled attainment, and show reasonable further progress in 2010 are summarized in Table 7-3. The PM-10 emissions from the onroad mobile sources in Table 7-3 are shown below:

2010 PM-10 Emissions from Onroad Mobile Sources
(tons/year)

Construction (road)	3,446
Exhaust/tire wear/brake wear	1,537
Paved roads (including trackout)	18,718
Unpaved roads	17,848
Total Onroad Mobile Sources	41,549

Converting the annual tons per year to metric tons on an annual average day in 2010 produces PM-10 emissions of 103.3 metric tons for the PM-10 nonattainment area. This represents the onroad mobile source emissions budget for the attainment year of 2010.

MAG will use this new budget for conformity analyses that begin after the budget is found to be adequate or is approved by EPA as part of the Five Percent Plan for PM-10. In conformity analyses that begin after the new budget is found to be adequate or is approved, onroad mobile source PM-10 emissions for 2010 or horizon years after 2010 can not exceed this budget.

The methods and assumptions used to estimate onroad mobile source emissions in 2010 are documented in Chapters II and III of the TSD. In future conformity analyses, the estimation of PM-10 emissions from onroad mobile sources may differ from the TSD, because EPA requires use of the latest planning assumptions (e.g., new emissions models, vehicle registration data, vehicle speeds, population and travel projections) in effect at the time each conformity analysis begins.

EXPEDITIOUS ATTAINMENT

The committed control measures that have been quantified will be implemented throughout the PM-10 nonattainment area. As shown in Figures 8-26 and 8-27, the committed control measures will reduce PM-10 emissions from a variety of sources, including construction (residential, commercial, road, and land clearing), vacant lots, paved roads, and unpaved parking lots. The modeled attainment demonstrations discussed earlier in this chapter indicate that the committed control measures in the plan will achieve attainment at all monitors in the nonattainment area by December 31, 2010.

Expediting the committed measures in the plan will not hasten attainment (i.e., accelerate the attainment date from December 31, 2010 to December 31, 2009). The attainment date could only be hastened if the committed control measures went into effect before the plan is due to EPA (i.e., in 2007). As shown in Table 8-15, very few of the control measures will be implemented before 2008 and the ones that will be implemented in 2007 have very small benefits.

There are ten committed control measures (Measures #2, #3, #8, #9, #10, #16, #36-38 and #44) that, collectively, are expected to increase compliance with Rule 310 from 51 percent in 2007 to 80 percent in 2010. Construction emissions will decline as an increasing share of workers, supervisors and dust coordinators receive extensive training and understand and comply with the more stringent rules. Five measures (Measures #8, #9, #10, #16, and #44) will also increase compliance with Rule 316 from 54 percent to 80 percent in 2010. Compliance with Rule 316 will improve as a result of the requirement for dust technicians on earthmoving sites of five acres or more. Compliance with Rules 310 and 316 will be encouraged by the dozens of new enforcement personnel to be hired, trained and deployed by Maricopa County, beginning in 2008. The commencement of nighttime and weekend inspections in 2008 will also increase compliance with Rules 310, 310.01, and Rule 316. These improvements in compliance are not expected to occur immediately, but incrementally, over the three year span of the Five Percent Plan.

Figure 8-26
Reductions in 2010 for Committed Control Measures
by Source Category

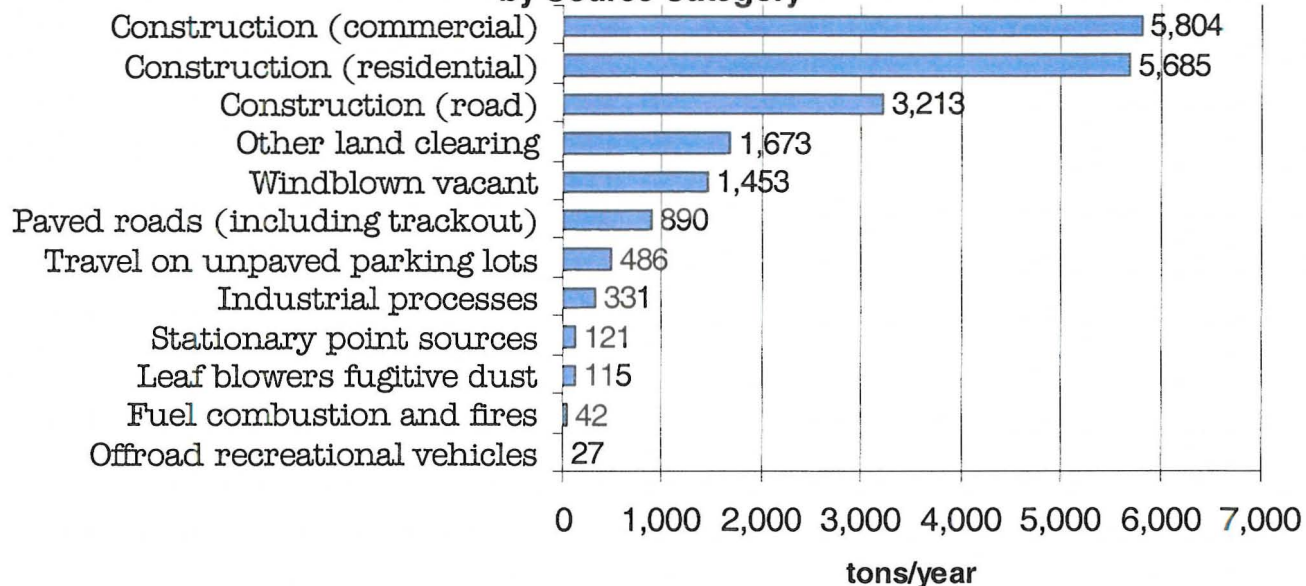


Figure 8-27
Percent Reductions in 2010 for Committed Control Measures
by Source Category

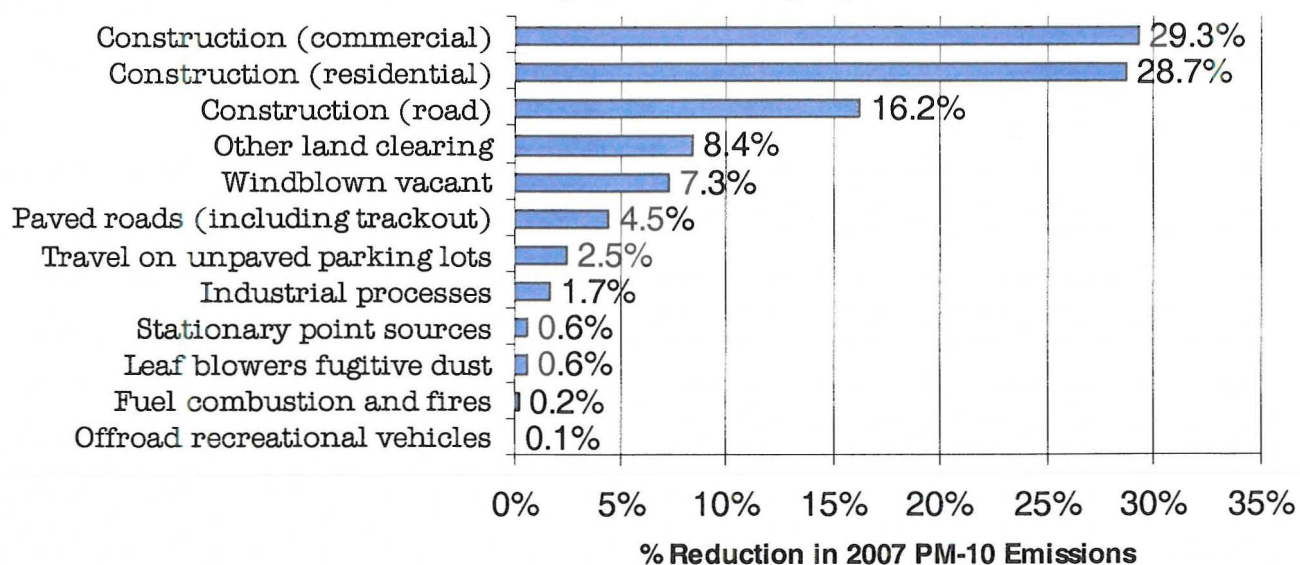


Table 8-15. PM-10 Emissions Reductions and Implementation Dates for Committed Control Measures

Measure # - Title	PM-10 Reductions (tons/year)			Implementation Date
	2008	2009	2010	
M2 - Extensive dust control training program	564.6	1,693.8	2,258.4	3/08
M3/16 - Dust managers/coordinators at earthmoving sites \geq 5 acres	1,306.5	2,923.4	4,108.8	3/08
M9/10/44 - Increase proactive Rule 310 and 316 inspections	1,153.3	3,488.0	4,673.4	6/08
M36-38 - Strengthen Rule 310 to promote continuous compliance	423.5	1,129.2	1,129.2	3/08
M8 - Conduct nighttime and weekend inspections	1,884.1	3,678.2	4,847.9	1/08
M21 - Ban leaf blowers from blowing debris into streets	13.7	18.8	19.3	3/08
M45 - Prohibit use of leaf blowers on unstabilized surfaces	67.7	92.2	94.6	3/08
M22 - Implement a leaf blower outreach program		0.8	0.9	12/08
M23 - Ban ATV use on high pollution days	25.7	26.4	27.1	9/07
M25 - Pave or stabilize existing unpaved parking lots	56.4	293.6	418.5	10/08
M28 - Pave or stabilize unpaved shoulders	650.6	705.5	888.8	1/07
M30 - Strengthen and increase enforcement of Rule 310.01 for vacant lots	155.5	621.8	621.8	10/08
M33 - Recover costs of stabilizing vacant lots	62.2	248.7	248.7	10/08
M31/32 - Restrict and enforce vehicle use/parking on vacant lots	197.6	458.5	458.5	3/08
M34 - Increase fines for open burning	1.2	1.2	1.2	9/07
M35 - Restrict use of outdoor fireplaces/pits/ambiance fireplaces	12.0	12.0	12.0	9/07
M47/48 - Other wood burning restrictions in SB 1552	29.0	29.0	29.0	9/07
M53 - Repave or overlay paved roads with rubberized asphalt	1.0	1.4	1.4	3/08
Total PM-10 Emissions Reductions for Committed Control Measures	6,604.6	15,422.7	19,839.6	
Five Percent Reduction Target (tons/year)	4,872	9,744	14,616	

In addition, the modeling for the Salt River Area attainment demonstration shows that the 24-hour PM-10 standard will be met in 2010 by a relatively narrow margin (i.e, 145 ug/m³ at the West 43rd Avenue monitor on a high wind day). The benefits of the committed control measures in 2008 and 2009 are not sufficient to model attainment in the Salt River Area before 2010.

For the reasons discussed above, the committed control measures in the Five Percent Plan demonstrate attainment as expeditiously as practicable. These measures will reduce emissions from sources throughout the nonattainment area, which will lead to attainment of the 24-hour PM-10 standard at all monitors by December 31, 2010.

CHAPTER NINE

PUBLIC PARTICIPATION

The Transportation-Air Quality Guidelines for public participation are issued jointly by the U.S. Environmental Protection Agency and the U.S. Department of Transportation. These guidelines are designed to encourage an effective public participation program for the development and implementation of the State Implementation Plan (SIP). According to the guidelines, the objectives of the public participation program should be to:

1. Promote public awareness of the air pollution problem, the SIP revision process, and the effects of various transportation control measures;
2. Encourage active participation from a variety of interest groups in the plan preparation process;
3. Promote public understanding and agreement on the transportation control measures necessary to improve air quality;
4. Provide for the identification of both interested and affected constituencies;
5. Ensure that the agencies and elected officials are responsive to these constituencies; and
6. Encourage a spirit of openness and trust among elected officials, agencies, and the public.

In order to be responsive to these guidelines, the Maricopa Association of Governments has established a formal public participation program. The program includes the MAG Air Quality Technical Advisory Committee, additional Air Quality Working Groups, as necessary, the MAG Management Committee, and the MAG Regional Council. Technical support for the public participation program is provided by MAG, the Arizona Department of Environmental Quality, the Arizona Department of Transportation, and Maricopa County Air Quality Department (see Figure 9-1). A brief description of these components of the program is described below.

DECISION MAKING STRUCTURE

The Maricopa Association of Governments has been designated as the lead planning agency for air quality planning within the Maricopa County area. MAG member agencies include the twenty-five cities and towns within Maricopa County and the contiguous urbanized area, the County of Maricopa, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, and the Arizona Department of Transportation. A representative from the Regional Public Transportation

FIGURE 9-1

MAG REGIONAL AIR QUALITY PLANNING TECHNICAL PROCESS

- All MAG regional air quality plans are prepared through a coordinated effort among the Arizona Department of Environmental Quality, Arizona Department of Transportation, Maricopa County Air Quality Department and Maricopa Association of Governments.

MAG AIR QUALITY POLICY TEAM

Composition: Director of Arizona Department of Environmental Quality; Director of Arizona Department of Transportation; Air Pollution Control Officer of Maricopa County; MAG Executive Director

- Oversees preparation of plans and overall technical planning effort
- Resolves technical problems and issues

MAG AIR QUALITY PLANNING TEAM

Composition: Staff from the Arizona Department of Environmental Quality, Arizona Department of Transportation; Maricopa County Air Quality Department; Maricopa Association of Governments

Agency Roles

- Arizona Department of Environmental Quality - air quality modeling and technical assistance, mobile source emissions research and inventory, input for the comprehensive list of measures and feasibility analysis, information, relating to the Vehicle Emission Inspection Maintenance Program, stationary and portable source control strategies, air quality research studies, State Air Quality Fund administration, adoption and submittal of State Implementation Plans to the Environmental Protection Agency, tracking plan implementation, assurances, special purpose air quality and meteorological monitoring for plan development and compliance
- Arizona Department of Transportation - State Transportation Improvement Program, other transportation plans and programs, input for the comprehensive list of measures and feasibility analysis
- Maricopa County Air Quality Department - stationary source emissions inventory and controls, coordinating the comprehensive emissions, inventory, air quality monitoring data, input for comprehensive list of measures and feasibility analysis, mandatory travel reduction program, trip reduction data, voluntary no drive days program, tracking plan implementation, reasonable further progress, assurances, special purpose air quality and meteorological monitoring for plan development and compliance
- Maricopa Association of Governments - demographic projections and socioeconomic data, transportation modeling, air quality modeling, Regional Transportation Improvement Program, Regional Transportation Plan, other transportation plans and programs, congestion management system, conformity, input for comprehensive list of measures and feasibility analysis, development of the air quality plans, interface with state, county, and local entities, recommending future year travel reduction goals, policies, and standards to Maricopa County, assistance to Maricopa County for the mandatory travel reduction program, review reasonable further progress made to reduce air pollution and plan adjustments if necessary, review plan implementation

The technical planning work is closely coordinated with EPA Region IX staff, Federal Highway Administration, and Federal Transit Administration.

Authority is also included on the MAG Management Committee. A representative from the Citizens Transportation Oversight Committee is also on the Regional Council. The policy development process is influenced by input from the MAG member agencies, MAG committees, local citizens, and staff. The decision making body for MAG is the Regional Council, which is composed of elected officials from the member agencies. The MAG Management Committee, which is composed of managers from the member agencies, makes recommendations to the Regional Council (see Figure 9-2).

The MAG Air Quality Technical Advisory Committee was established by the MAG Regional Council in 1995. The purpose of the Committee is to review and comment on technical information generated during the planning process and make technical recommendations to the MAG Management Committee.

PUBLIC PARTICIPATION IN THE PREPARATION OF THE MAG 2007 FIVE PERCENT PLAN FOR PM-10

The process used to develop the MAG 2007 Five Percent Plan PM-10 included numerous meetings of the MAG Air Quality Technical Advisory Committee, MAG Management Committee and MAG Regional Council. All of these meetings were open to public attendance. During the preparation of the Five Percent Plan for PM-10, a public hearing was conducted to solicit additional citizen input. A brief description of the Air Quality Technical Advisory Committee meetings conducted in preparing the plan is provided below.

Meetings of the MAG Air Quality Technical Advisory Committee

On January 26, 2006, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Particulate Pollution Update, New Particulate Standards Proposed by EPA, Update on Agricultural Best Management Practices and Update on PM-10 Certified Street Sweeper Projects for FY 2006 CMAQ Funding.

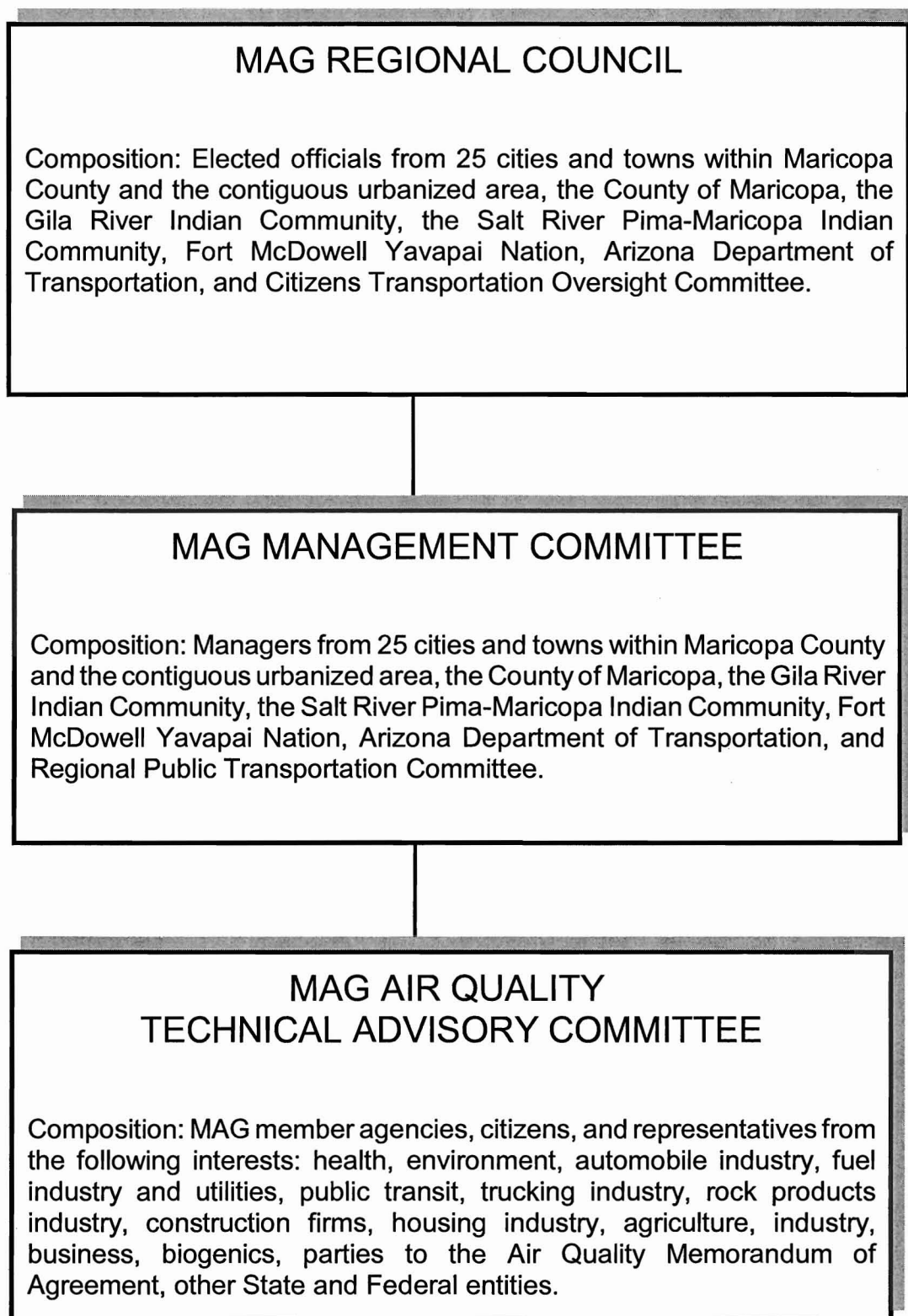
On February 3, 2006, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Update on the Arizona Natural Events Action Plan Technical Criteria Document, CMAQ Annual Report and Proposed New Air Quality Project for the MAG FY 2007 Work Program.

On April 27, 2006, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Funding Needed for Transportation Control Measures in Air Quality Plans, Particulate Pollution Update, City of Goodyear Ordinance Prohibiting Off-Road Vehicle Use, Update on the Arizona Natural Events Action Plan and Tentative MAG Air Quality Project Schedule for 2006 and 2007.

On May 23, 2006, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Evaluation of Proposed CMAQ Projects for the Federal FY 2006 Interim Year End Closeout, Industry Perspective From the Clark County Dust Control Program Workshop, City of Phoenix Dust Control Projects and Funding Needed for Transportation Control Measures in Air Quality Plans.

FIGURE 9-2

MAG REGIONAL AIR QUALITY PLANNING PROCESS



On June 29, 2006, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Draft 2006 MAG Conformity Analysis for the Draft FY 2007-2008 MAG Transportation Improvement Program and Draft Regional Transportation Plan-2006 Update, Update on CMAQ Projects for the Federal FY 2006 Interim Year End Closeout and Particulate Pollution Update.

On September 28, 2006, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Evaluation of Proposed CMAQ Projects for the FY 2008-2012 MAG TIP, Evaluation of Proposed PM-10 Paving Unpaved Road Projects for FY 2008 and 2009 CMAQ Funding and Evaluation of Proposed PM-10 Certified Street Sweeper Projects for FY 2007 CMAQ Funding.

On October 26, 2006, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the CMAQ Project Evaluation Process, Dust Suppressant Information, MAG Biogenics Study and New Particulate Pollution Standards.

On December 7, 2006, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Preliminary 2005 PM-10 Emissions Inventory, Preliminary Projected 2007, 2008 and 2009 Emissions Inventories, Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter, Evaluation of Potential Agricultural Control Measures to Reduce PM-10 and Tentative 2007 Meeting Schedule for the MAG Air Quality Technical Advisory Committee.

On January 11, 2007, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Detailed List of Phoenix Paving Unpaved Road Projects Proposed for FY 2008 CMAQ Funding, PM-10 Source Attribution and Deposition Study, Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter, Air Quality Modeling Approach for the Five Percent Plan for PM-10 and Air Quality Modeling Approach for the Eight-Hour Ozone Plan for the Maricopa Nonattainment Area.

On January 19, 2007, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter, Air Quality Modeling Approach for the Five Percent Plan for PM-10 and Air Quality Modeling Approach for the Eight-Hour Ozone Plan for the Maricopa Nonattainment Area.

On February 1, 2007, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Maricopa County Public Education Campaign to Reduce Particulates in the Air, Status of the Maricopa County 2005 PM-10 Emissions Inventory, Description of the Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter and Status Report on Agricultural Measures.

On February 15, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Description of the Preliminary Draft Comprehensive List of Measures to Reduce PM-10 Particulate Matter, Status Report on Agricultural Measures, CMAQ Annual Report and Legislative Update.

On March 1, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Update on the Maricopa County 2005 PM-10 Emissions Inventory, Suggested List of Measures to Reduce PM-10 Particulate Matter and Status Report on Agricultural Measures.

On March 6, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Suggested List of Measures to Reduce PM-10 Particulate Matter.

On March 9, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Suggested List of Measures to Reduce PM-10 Particulate Matter.

On March 29, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Status Report on Agricultural Measures, Update on the Five Percent Plan for PM-10, MAG Silt Loading Study and Ozone Control Measures.

On April 26, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Additional PM-10 Measures Recommended by Maricopa County for the Suggested List, Status Report on the Maricopa County 2005 Periodic Emissions Inventory for PM-10, Final Report on the Analysis of Particulate Control Measure Cost Effectiveness and Ozone Control Measures.

On May 22, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Evaluation of Proposed CMAQ Projects for the Federal FY 2007 Interim Year End Closeout, Eight-Hour Ozone Plan, Ozone Control Measures, Status Report on the Maricopa County 2005 Periodic Emissions Inventory for PM-10, Update on Additional PM-10 Measures and Arizona Center for Law in the Public Interest Letter of Intent to File a Lawsuit.

On June 7, 2007, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Eight-Hour Ozone Plan and Update on Additional PM-10 Measures.

On June 28, 2007, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Draft 2007 MAG Conformity Analysis for the Draft FY 2008-2012 MAG Transportation Improvement Program and Draft Regional Transportation Plan-2007 Update, Evaluation of Proposed PM-10 Projects for FY 2007 CMAQ Funding, Decision of the U.S. Court of Appeals on the EPA Request for Rehearing of the Phase I Rule to Implement the 8-Hour Ozone Standard and EPA Proposed New 8-Hour Ozone Standard and Update on S.B. 1552 Air Quality Program.

On September 25, 2007, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Evaluation of Proposed CMAQ Projects for the FY 2009-2013 MAG TIP, Evaluation of Proposed PM-10 Paving Unpaved Road Projects for FY 2010 CMAQ Funding, Evaluation of Proposed PM-10 Certified Street

Sweeper Projects for FY 2008 CMAQ Funding and Status Report on the MAG Five Percent Plan for PM-10 and Draft Modeling.

PUBLIC INVOLVEMENT PROCESS FOR TRANSPORTATION AND AIR QUALITY

The Safe, Accountable, Flexible, Efficient Transportation Equity Act - a Legacy for Users (SAFETEA-LU) continues to emphasize public involvement in the metropolitan transportation planning process that existed under the Transportation Equity Act for the 21st Century (TEA-21). The intent of SAFETEA-LU is to increase public awareness and involvement in transportation planning and programming. SAFETEA-LU requires that the metropolitan planning organization work cooperatively with the state department of transportation and the regional transit operator to provide citizens, affected public agencies, representatives of transportation agency employees, freight shippers, private providers of transportation, representatives of users of public transit, and other interested parties a reasonable opportunity to comment on proposed transportation plans and programs.

In accordance with the enhanced SAFETEA-LU guidelines, in December 2006 the MAG Regional Council approved a Public Participation Plan to guide the MAG public input process. This enhanced plan incorporated many of the previously adopted public involvement guidelines set forth by the Regional Council in 1994 and enhanced in 1998. The MAG Public Participation Plan sets forth guidelines for receiving public opinions, comments and suggestions on transportation planning and programming in the MAG region. This process provides complete information on transportation plans, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement in the planning process.

The public involvement process is divided into four phases: Early Input, Mid-Phase, Final Phase and Continuous Involvement. The Early Input meetings ensure early involvement of the public in the development of these plans and programs. The Mid Phase process provides for input on initial plan analysis for the Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) and includes a public hearing on regional transportation issues, while the Final Phase provides an opportunity for final comment on the RTP, TIP and Air Quality Conformity Analysis. Air quality information is often provided at the input meetings and on a continual basis throughout the year. In addition, Continuous Outreach is conducted throughout the annual update process and includes activities such as presentations to community and civic groups, distributing press releases and newsletters, and coordinating with the Citizens Transportation Oversight Committee (CTOC).

In accordance with 40 CFR §93.105, consultation is conducted on the draft air quality plans with the State air and transportation agencies, local air quality and transportation agencies, Environmental Protection Agency, Federal Transit Administration, and Federal Highway Administration. Public hearings are conducted on draft air quality plans in accordance with State and federal requirements.

TITLE VI CONSIDERATIONS

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color and national origin by recipients and sub-recipients of federal funds and prohibits exclusion from participation in, denial of benefits, or being subjected to discrimination under any program or activity receiving federal financial assistance. Additional federal and state laws and directives prohibit discrimination on the basis of age, gender, handicap or disability. The Executive Order on Environmental Justice encourages consideration of environmental justice concerns, especially the impact of programs and activities on low-income and minority populations. The Act and its related laws and directives hereinafter are called, collectively, *Title VI*.

MAG is responsible for incorporating Title VI requirements and environmental justice concerns in its planning and programming processes, and the enforcement of statewide compliance, including the MAG region, is the responsibility of ADOT. MAG's policy is to assist ADOT in its compliance efforts.

MAG has developed a draft Information and Reporting Program in cooperation with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT) as part of ADOT's Title VI Plan. The MAG Information and Reporting Program depicts what MAG will do, how it will be done, and how activities will be monitored in relation to Title VI requirements. MAG is committed to policies that will ensure equal opportunity and programs that comply with Title VI.

MAG is a voluntary association of local governments in Maricopa County, Arizona, whose members are the twenty-five cities and towns within Maricopa County and the contiguous urbanized area, the County of Maricopa, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, and the Fort McDowell Yavapai Nation. A representative from the Regional Public Transportation Authority is a member of the MAG Management Committee. A representative of the Arizona Department of Transportation (ADOT) Board and a representative of the Citizens' Transportation Oversight Committee (CTOC) are members of the MAG Regional Council. MAG receives funds from a variety of sources, including direct federal, indirect federal, and state and local government funds.

Historically, the MAG Human Services Planning Program has considered the needs of populations vulnerable to discrimination or exclusion. These populations may be described by minority race or ethnicity, low income, functional limitations or disabilities, or advanced age (60 years or older). Program activities intentionally solicit public input, participation and feedback regarding local needs.

Public Involvement Process

MAG currently conducts activities to encourage public participation in its decisions. These activities include open houses, community meetings, and presentations to local committees. This open process offers complete information on plans, timely public notice, public access to decisions, and opportunities for early and continuing involvement. In addition to general public involvement processes, the MAG Human Services Planning

Program solicits input from local minority populations and people in under served communities. The processes and findings of the Human Services Planning Program are integrated into MAG's planning programs, and members of the MAG Human Services Planning Program staff are part of the MAG Title VI team.

MAG targeted known potential populations that could be affected by proposed policies of this plan. Each entity or individual was sent a personal invitation to comment on the draft air quality plan (see Appendix D, Exhibit 1).

Information Dissemination

MAG employs a strategy of expanded information dissemination and public access to plans and decisions. Copies of studies and reports are placed in public libraries in the region as standard procedure.

MAG committee meetings are conducted in accordance with the Open Meeting Law, and thus provide citizens public opportunities to comment before meetings of MAG technical and policy committees. Alternative formats, accessible meeting locations and accessible meeting times are encouraged for MAG meeting planning.

MAG houses numerous records of data, statistics and information. Data collection, analysis and portrayal methods and products are evaluated periodically. Program area managers assess MAG's available data sources for relevance to Title VI requirements not less often than annually.

These partnerships will continue in the form of periodic meetings and communications with ADOT, the Regional Public Transportation Authority (RPTA), and MAG member agencies. MAG maintains an open dialogue with the ADOT Office of Civil Rights.

MAG has partnered with the Arizona Department of Economic Security for human services planning since 1976. The MAG human services planning process enhances the organization's consideration and participation of minority, poor and other population groups in developing regional plans and projects.

MAG maintains a home page on the Internet (www.mag.maricopa.gov) which provides the public with access to information on the role and history of the agency and its programs, as well as the agendas and minutes of Committee meetings. The web page serves as an excellent portal for disseminating information about MAG events, programs and plans.

CHAPTER TEN

COMMITMENTS FOR IMPLEMENTATION OF THE MAG 2007 FIVE PERCENT PLAN FOR PM-10

This Chapter, contained in an accompanying document, includes resolutions from the MAG member agencies and other implementing entities. The resolutions indicate specific commitments to implement various control strategies. Each jurisdiction determines which measures are feasible for implementation by that jurisdiction. Air quality legislation passed by the Arizona State Legislature is also included.

Generally, the authorities of cities and towns to implement the types of measures that they have committed to in their respective resolutions are provided under A.R.S. § 9-240 Powers of Common Council. The general authorities of the county to implement the measures in the commitments are provided under A.R.S. § 11-251 and A.R.S. § 49-478. Copies of these local and county government authorities are included in the commitments document of the Five Percent Plan.

Specifically, the commitments contain a description of the measure which will be implemented, the implementation schedule, authority of the entity for implementation, the financial resources necessary to put the measure in place, and the monitoring program designed to track implementation. The commitments document also contains the measures which the State, county, and local jurisdictions found not to be feasible and the corresponding rationale. Regulations and ordinances are also included.

It is important to note that all of the commitments received are in addition to the committed measures included in the Revised MAG 1999 Serious Area Particulate Plan for PM-10 and the ADEQ Salt River PM-10 State Implementation Plan Revision. The committed measures in the MAG 2007 Five Percent Plan for PM-10 are new committed measures above and beyond the measures in the prior PM-10 plans. The Five Percent Plan also includes measures from other Serious Areas which EPA may have determined to be Best Available Control Measures.